Government
Publications

SESSIONAL PAPERS.

VOL. XXVII.—PART VIII.

FIRST SESSION EIGHTH LEGISLATURE

OF THE

PROVINCE OF ONTARIO.

SESSION 1895.

TORONTO:
PRINTED FOR LUD. K. CAMERON, QUEEN'S PRINTER,
BY WARWICK BROS & RUTTER 68 AND 70 FRONT STREET WEST
1895.

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LIST OF SESSIONAL PAPERS.

ARRANGED ALPHABETICALLY.

TITLE.	No.	REMARKS.
Accounts, Public	2	*Printed.*
Agricultural and Arts, Report	20	"
Agricultural College, Report	17	"
Agricultural Societies, Analysis	70	*Not printed.*
Algonquin National Park, Regulations	37	*Printed.*
" " " Boundaries	38	*Not printed.*
Asylums, Report	10	*Printed.*
Bee-Keepers' Association, Report	23	*Printed.*
Births, Marriages and Deaths, Report	27	"
Blind Institute, Report	15	"
Bonds and Securities	50	*Not printed.*
Canadian Institute, Report (*part of*)	4	*Printed.*
Central Prison, Broom contract	62	"
Children's Protection Act, Report	29	"
Coroners' Inquests	69	*Not printed.*
Crown Lands Report	5	*Printed.*
Dairymen and Creameries, Report	21	*Printed.*
Deaf and Dumb Institute, Report	16	"
Diamond Drill, Regulations	42	"
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Division Courts, Report	7	*Printed.*
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Education, Report	4	*Printed.*
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Elliott, Judge, Surrogate Court Fees	35	"
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Farmers' Institutes, Report	22	"
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Fruit Experimental Stations, Report	67	"
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Good Roads Association, Report	59	"
Hastings, North, registrations	63	*Not printed.*
Health, Report	73	*Printed.*
Hospitals, Report	14	"
Hungerford registrations	63	*Not printed.*
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Judicature Act, fees to Judge Elliott	35	*Not printed.*
" " " Judge Mosgrove	36	"
Kingston School of Mining, Report	76	*Printed.*
Knight, Alfred, correspondence	61	*Not printed.*
Legal Offices, Report	28	*Printed.*
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Nelson & Sons, Broom contract	62	*Printed.*
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North Hastings, registrations in	63	"

Title.	No.	Remarks.
Orphan Asylums, Report	12	*Printed.*
Osgoode Hall, fee paid officials	77	*Not printed.*
Poultry and Pet Stock, Report	24	*Printed.*
Primitive Man, (*part of*)	4	"
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Registrars' fees	58	"
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Secretary and Registrar, Report	75	*Printed.*
Sheep and Swine Breeders,' Report	25	"
Statute distribution	48	*Not printed.*
Tavern and Shop Licenses, Report	8	*Printed.*
Titles, Master of, Report	55	*Not printed.*
Toronto General Trusts Co'y., Report	46	"
Toronto University, Auditor's Report	30	*Printed.*
" Finance	31	"
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" Bursar's Statement	41	*Not printed.*
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LIST OF SESSIONAL PAPERS.

Arranged in Numerical Order with their titles at full length; the dates when Ordered and when presented to the Legislature; the name of the Member who moved the same, and whether Ordered to be Printed or not.

CONTENTS PART I.

No. 1.. Return from the Records of the General Election to the Legislative Assembly in 1894, shewing: (1) The number of Votes polled for each Candidate in each Electoral District in which there was a contest. (2) The majority whereby each successful Candidate was returned. (3) The total number of Votes polled in each District. (4) The number of Votes remaining unpolled. (5) The number of names on the Voters' List in each District. (6) The population of each District as shown by the last census, together with a Supplementary Return from the Records of the Elections to the Legislative Assembly, after the General Election in 1894, shewing: (1) The number of Votes polled for each Candidate in each Electoral District. (2) The majority whereby each successful Candidate was returned. (3) The total number of Votes polled in each District. (4) The number of Votes remaining unpolled. (5) The number of names on the Voters' List in each District. (6) The population of each District as shewn by the last Dominion Census. Presented to the Legislature, 21st February and 5th April, 1895. *Printed.*

No. 2.. Public Accounts of the Province for the year 1894. Presented to the Legislature, 27th February, 1895. *Printed.*

No. 3.. Estimates for the service of the Province until the Estimates of the year are finally passed. Presented to the Legislature, 22nd February, 1895. *Not printed.* Estimates for the year 1895. Presented to the Legislature, 27th February, 1895. *Printed.* Estimates (Supplementary) for the year 1895. Presented to the Legislature, April 10th, 1895. *Printed.*

CONTENTS PART II.

No. 4.. Report of the Minister of Education for the year 1894, with the statistics for 1893. Presented to the Legislature, 4th March, 1895. *Printed.*

No. 5.. Report of the Commissioner of Crown Lands for the year 1894. Presented to the Legislature, 26th March, 1895. *Printed.*

No. 6.. Report of the Department of Immigration for the year 1894. Presented to the Legislature, 3rd April, 1895. *Printed.*

No. 7.. Report of the Inspector of Division Courts for the year 1894. Presented to the Legislature, 25th March, 1895. *Printed.*

No. 8.. Report of the working of the Tavern and Shop Licenses Act for the year 1894. Presented to the Legislature, 26th February, 1895. *Printed.*

No. 9.. Report of the Commissioner of Public Works for the year 1894. Presented to the Legislature, 7th March, 1895. *Printed.*

No. 10.. Report upon the Lunatic and Idiot Asylums of the Province for the year ending 30th September, 1894. Presented to the Legislature, 22nd February, 1895. *Printed.*

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No. 11.. Report upon the Common Gaols, Prisons and Reformatories of the Province for the year ending 30th September, 1894. Presented to the Legislature, 27th March, 1895. *Printed.*

No. 12.. Report upon the Houses of Refuge and Orphan and Magdalen Asylums for the year ending 30th September, 1894. Presented to the Legislature, 21st March, 1895. *Printed.*

No. 13.. Report of the Inspector of Insurance and Registrar of Friendly Societies, 1894. Presented to the Legislature, 25th February, 1895. *Printed.*

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No. 14.. Report upon the Hospitals of the Province for the year ending 30th September, 1894. Presented to the Legislature, 26th March, 1895. *Printed.*

No. 15.. Report upon the Ontario Institution for the Education of the Blind, Brantford, for the year ending 30th September, 1894. Presented to the Legislature, 22nd February, 1895. *Printed.*

No. 16.. Report upon the Ontario Institution for the Education of the Deaf and Dumb, Belleville, for the year ending 30th September, 1894. Presented to the Legislature, 22nd February, 1895. *Printed.*

No. 17.. Report of the Ontario Agricultural College and Experimental Farm and of the Agricultural and Experimental Union for the year 1894. Presented to the Legislature, 19th March, 1895. *Printed.*

No. 18.. Report of the Entomological Society for the year 1894. Presented to the Legislature, 25th February, 1895. *Printed.*

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No. 19.. Report of the Fruit Growers' Association of Ontario for the year 1894. Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 20.. Report of the Agriculture and Arts Association for the year 1894. Presented to the Legislature, 25th February, 1895. *Printed.*

No. 21.. Reports of the Dairymen and Creameries Associations of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 22.. Report of the Farmers' Institutes of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

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No. 23.. Report of the Bee-keepers' Association of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 24.. Report of the Poultry and Pet Stock Associations of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 25.. Report of the Sheep and Swine Breeders' Association of the Province for the year 1894. Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 26.. Report of the Inspectors of Factories for the year 1894. Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 27.. Report upon the registration of Births, Marriages and Deaths for the year 1893. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 28.. Report of the Inspector of Legal Offices for the year 1894. Presented to the Legislature, 21st March, 1895. *Printed.*

No. 29.. Report of the work under the Children's Protection Act for the year 1894. Presented to the Legislature, 26th February, 1895. *Printed.*

No. 30.. Auditors' Report to the Board of Trustees on Capital and Income Accounts, University of Toronto, for the year ending 30th June, 1894. Presented to the Legislature, 1st March, 1895. *Printed.*

No. 31.. Report of the Standing Committee on Finance, University of Toronto. Presented to the Legislature, 1st March, 1895. *Printed.*

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No. 32.. Report of the Commissioners appointed to enquire concerning the mode of appointing and remunerating certain provincial officials now paid by Fees and the extent of the remuneration they should receive. Presented to the Legislature, 19th March, 1895. *Printed.*

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No. 33.. Report of the Standing Committee on Finance, Faculty of Medicine, University of Toronto. Presented to the Legislature, 1st March, 1895. *Printed.*

No. 34.. Report of the Council of University College, 1893-94. Presented to the Legislature, 25th February, 1895. *Printed.*

No. 35.. Copy of an Order in Council respecting the payment of surplus Surrogate Court Fees to Judge Elliott, Junior Judge of the County Court of the County of Middlesex. Presented to the Legislature, 25th February, 1895. *Not printed.*

No. 36.. Copy of an Order in Council respecting the payment of surplus Surrogate Court Fees to Judge Mosgrove, Junior Judge of the County Court of the County of Carleton. Presented to the Legislature, 25th February, 1895. *Not printed.*

No. 37.. Regulations respecting the Algonquin National Park. Presented to the Legislature, 28th February, 1895. *Printed.*

No. 38.. Copy of Order in Council extending the boundaries of Algonquin National Park. Presented to the Legislature, 28th February, 1895. *Not printed.*

No. 39.. Mining Regulations made during the year 1894. Presented to the Legislature, 28th February, 1895. *Printed.*

No. 40.. Regulations respecting Rondeau Provincial Park. Presented to the Legislature, 28th February, 1895 *Printed.*

No. 41.. Bursar's Statement, shewing disbursements and estimated revenue of University of Toronto, for the year 1894-5. Presented to the Legislature, 28th February, 1895. *Not printed.*

No. 42.. Rules and Regulations for the control and working of Diamond Drills. Presented to the Legislature, 1st March, 1895. *Printed.*

No. 43.. Return to an Order of the House of the seventh day of March, 1894, for a Return shewing (1) the actual loss, over and above insurance, sustained by the Province by the burning of the Toronto University building; (2) names of each insurance company, amount paid by each, amount insured in each at the time of the fire, dates of payment; (3) the present amount of insurance held by the Government on the new Parliament Buildings, University and Upper Canada College, giving names of each company and the amount each carries, and the rate *per* $100.00; (4) what loss was sustained over and above insurance on the burning of the Central Prison. Presented to the Legislature, 1st March, 1895. Mr. *Ryerson. Not printed.*

No. 44 . Copy of Agreement between Her Majesty the Queen, E. V. Douglas and Francis H. Clergue, for the erection and equipment of pulp and paper mills at Sault Ste. Marie. Presented to the Legislature, 4th March, 1895. *Not printed.*

No. 45... Report of the Council of the University of Toronto. 1893-4. Presented to the Legislature, 7th March, 1895. *Printed.*

No. 46.. Statement of the affairs of the Toronto General Trusts Company for the year 1894. Presented to the Legislature, 7th March, 1895. *Not printed.*

No. 47.. Report of the Commissioners of the Queen Victoria Niagara Falls Park for the year 1894. Presented to the Legislature, 7th March, 1895. *Printed.*

No. 48.. Statement as to the disposal of the Revised and Sessional Statutes for the year 1894. Presented to the Legislature, 7th March, 1895. *Not printed.*

No. 49.. Report of the Inspector of the House of Industry and Refuge, County of Elgin, for the year 1894. Presented to the Legislature, 11th March, 1895. *Not printed.*

No. 50.. Detailed Statement of all Bonds and Securities recorded in the Provincial Registrar's Office since the last Return submitted to the Legislative Assemb'y, made in accordance with the provisions of R. S. O. chap. 15, sec. 23. Presented to the Legislature, 11th March, 1895. *Not printed.*

No. 51.. Return to an Order of the House of the eleventh day of March, 1895, for a Return of copies of all correspondence between the Minister of Education, or any member of the Government, and the authorities, or any of them, of University College relating to the matter at issue between the students and the authorities of the College. Presented to the Legislature, 12th March, 1895. Mr. *Whitney.* *Printed.*

No. 52.. Report of the Ontario Game and Fish Commission for the year 1894. Presented to the Legislature, 18th March, 1895. *Printed.*

No. 53.. Report of Upper Canada College for the year ending 30th June, 1894. Presented to the Legislature, 15th March, 1895. *Printed.*

No. 54.. General Rules and Orders made by the Court of Appeal for Ontario, respecting the trial of Election Petitions pursuant to the Ontario Controverted Elections Act, R. S. O., chap. 10. Presented to the Legislature, 15th March. 1895. *Printed.*

No. 55.. Report of the Master of Titles for the year 1894 Presented to the Legislature, 18th March, 1895. *Not printed.*

No. 56.. Return to an Order of the House of the seventh day of March, 1894, for a Return shewing what deductions have been made in the past ten years in the amounts payable by any municipality to the Province in respect of Drainage Works, or advances made for such works, giving each municipality separately, with the amount of the original indebtedness and the amount of the reduction made with respect to it, and the authority for such reduction. And shewing also, whether any of such municipalities, and if so, which, are in arrear in respect of the payments to have been made on the reduced indebtedness and the amounts in arrear. Presented to the Legislature, 19th March, 1895. Mr. *Meredith*. *Printed.*

No. 57.. Certain Minutes of the Education Department and Copies of Agreement with certain Publishers of Text Books used in the Schools. Presented to the Legislature, 21st March, 1895. *Printed.*

No. 58.. Return shewing the fees and emoluments of the Registrars of Deeds for the Province for the year 1894, with which are contrasted receipts of the same nature in the years 1892 and 1893. Presented to the Legislature, 1st April, 1895. *Printed.*

No. 59.. Report of the Good Roads Association of Ontario for the year 1894 Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 60... Report of the Niagara Falls Park and River Railway Company for the year 1894. Presented to the Legislature, 22nd March, 1895. *Not printed.*

No. 61.. Return to an Order of the House of the eleventh day of March, 1895, for a Return of copies of all correspondence relating to the appointment of Alfred Knight as Clerk of the First Division Court of the Counties of Lennox and Addington. Presented to the Legislature, 22nd March, 1895. Mr. *McLaren*. *Not printed.*

No. 62... Copy of an agreement between the Inspector of Prisons and Public Charities and Messrs. H. A. Nelson & Sons, relative to the manufacture of brooms at the Central Prison. Also, of an Order in Council approved by His Honour the Lieutenant-Governor the eighteenth day of August, 1894, authorizing the Inspector to execute the said agreement. Presented to the Legislature, 27th March, 1895. *Printed.*

No. 63.. Return to an Order of the House, of the eighth day of March, 1895, for a Return, shewing the number of registrations in each Municipality in the County of Hastings. The number of registrations during the last ten years in the Riding of North Hastings, in the different Municipalities, together with the registrations during the last ten years in the Township of Hungerford. The registration fees during the year 1894 in the Riding of North Hastings and the Township of Hungerford. Presented to the Legislature, 25th March, 1895. Mr. *Haggerty*. *Not printed.*

No. 64.. Return to an Address to His Honour the Lieutenant-Governor, of the fifteenth day of March, 1895, praying that he will cause to be laid

before this House copies of all correspondence in the possession of the Department of the Attorney-General of Ontario in reference to warrants issued in one Province and to be endorsed in another. Also, copies of all letters and documents relating to warrants issued in Montreal and endorsed in Ottawa. Presented to the Legislature, 25th March, 1895. Mr. *Evanturel.* *Not printed.*

No. 65.. Return to an Order of the House of the eighteenth day of March, 1895, for a Return shewing the cost of the Diamond Drill; the date when operations were begun with it, and the number of days it has been in operation; the hours of the day it is worked; a statement of the work done and where carried on since its purchase and the number of men employed in its use and the rate of wages at which they are engaged. Presented to the Legislature, 28th March, 1895. Mr. *Farwell.* *Not printed.*

No. 66.. Regulations of the Department of Education respecting grants to Schools in New and Poor Townships. Presented to the Legislature, 2nd April, 1895. *Not printed.*

No. 67.. Report of the Fruit Experimental Stations of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

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No. 68.. Report of the Bureau of Industries of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 69.. Return to an Order of the House of the fourteenth day of March, 1894, for a Return of all Coroners' Inquests held under the provisions of the Revised Statutes respecting Coroners, or the Acts consolidated therein, for each of the ten years preceding the first of January, 1880, and for each of the ten years succeeding the same date. The Return to shew the particulars for each year separately, and whether such inquests were held under the provisions of section 3 of the said Revised Statutes, or of sub-section 1 of the 4th section, or of sub-section 2 of the said 4th section thereof. Presented to the Legislature, 5th April, 1895. Mr. *Hudson.* *Not printed.*

No. 70.. Analysis of Reports of County, Township and Horticultural Societies. Presented to the Legislature, 6th April, 1895. *Not printed.*

No. 71.. Return to an Order of the House of the twenty-second day of March, 1895, for a Return, classifying the maintenance expenditures of the Public Institutions of the Province for the year 1893, under heads shewing: (*a*), Expenditure for salaries, wages, etc.; (*b*), Amounts paid for supplies furnished under contract; (*c*), Expenditure for meat supplies under special arrangement; (*d*), Expenditure for other supplies under different heads, indicating the comparative practicability or impracticability of purchasing same by tender, instead of the open market. Presented to the Legislature, 8th April, 1895. Mr. *Hobbs.* *Printed.*

No. 72.. Report of the Bureau of Mines for the year 1894. Presented to the Legislature, 9th April, 1895. *Printed.*

No. 73.. Report of the Provincial Board of Health for the year 1894. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 74.. Report of a Special Committee of the Senate of Toronto University with respect to the Assets and Endowment of the University. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 75.. Report of the Secretary and Registrar of the Province for the year 1894. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 76.. Report of the Board of Governors of the School of Mining and Agriculture, Kingston. Presented to the Legislature, 11th April, 1895. *Printed.*

No. 77.. Return to an Order of the House of the third day of April, 1895, for a Return shewing the names of all officials employed in the Courts, or in connection with the Courts, at Osgoode Hall, Toronto, who are paid wholly, or in part, by fees. The amount of fees collected by each such official, the services for which such fees are charged, amount of fees retained by each of such official for his own use and the amount of fees, if any, paid to the Law Society or to the Province. Presented to the Legislature, 11th April, 1895. Mr. *McPherson. Not printed.*

UNIVERSITY OF TORONTO

REPORT

OF THE

STANDING COMMITTEE

ON

FINANCE

FACULTY OF MEDICINE

1894-5.

ADOPTED JANUARY 11, 1895.

TORONTO:
WARWICK BROS. & RUTTER, PRINTERS, &c., 68 AND 70 FRONT STREET WEST.
1895.

UNIVERSITY OF TORONTO.

The Standing Finance Committee beg leave to submit the following estimates of Income and Expenditure of the Medical Faculty for the years 1894-95.

Income.	—	—
1. Tuition Fees:	$ c.	$ c.
First year	5,775 00	
Less fees for Arts subjects	1,078 00	4,697 00
Second year	4,650 00	
Less fees for Arts subjects	930 00	3,720 00
Third year		4,930 00
Fourth year		5,355 00
Occasional (Dental) students in Practical Anatomy		710 00
2. Registration fees		385 00
Total estimated income		19,797 00

Proportion available for working expenses, etc., (40 per cent.) ..... $ 7,918.80
Proportion available for salaries (60 per cent.) 11,878.20

Summary of Estimated Expenditure, 1894 95.

	Payable out of 60 per cent.	Payable out of 40 per cent.	Payable out of Surplus.
1. Salaries:	$ c.	$ c.	$ c.
(a) Retiring allowances ($874.67)	587 52	287 15	
(b) Assistant Demonstrators of Anatomy	700 00		
(c) Lecturers and Demonstrators	1,620 00		
(d) Professors ($9,562.00)	8,970 68		591 32
2. Anatomical Department:			
(a) Maintenance, etc		4,097 00	
(b) Apparatus			500 00
3. Other Departments:			
(a) Maintenance, etc		2,360 00	
(b) Apparatus			500 00
4. General expenses		1,174 65	
Totals	11,878 20	7,918 80	1,591 32

Remarks.

1. The amount of the Surplus Fund at present is $2,710.54.
2. The retiring allowances, paid to Dr. Thorburn and Dr. H. H. Wright, cease with this year.

Detailed Estimate of Expenditure, 1894-95.

		$ c.
1. Salaries:		
(*a*) Retiring allowances:		
Dr. Thorburn		327 32
Dr. H. H. Wright		547 35
		874 67
(*b*) Assistant Demonstrators of Anatomy:		
Dr. Starr		150 00
Dr. Thistle		100 00
Dr. Gordon		100 00
Dr. Cane		100 00
Dr. McKenzie		100 00
Dr. Winnett		100 00
Dr. Clinghau		50 00
		700 00
(*c*) Lecturers and Demonstrators:		
Dr. Amyot		250 00
Dr. Burnham		60 00
Dr. McDonagh		60 00
Dr. W. P. Caven		350 00
Mr. Heebner		250 00
Dr. H. W. Aikins		250 00
Dr. Ellis		125 00
Dr. Spencer		225 00
Hon. D. Mills		50 00
		1,620 00
(*d*) Professors:		
Dr. Richardson		602 00
Dr. Primrose ($295.66 from surplus)		1,500 00
Dr. W. T. Aikins		602 00
Dr. McFarlane		602 00
Dr. Cameron		602 00
Dr. Peters		602 00
Dr. Graham		602 00
Dr. McPhedran		602 00
Dr. Ogden		602 00
Dr. A. H. Wright		602 00
Dr. J. M. McCallum		602 00
Dr. Oldright		301 00
Dr. J. Caven ($295.66 from surplus)		1,500 00
Dr. Reeve		241 00
		9,562 00

NOTE.—The estimated salaries of Professors, Lecturers and Demonstrators are calculated on the basis of the minimum duties, as defined in the scheme of re-organization. Should the work actually performed fall short of the minimum duty, the distribution of the amount available for salaries will be calculated on the basis of such reduced work.

		$ c.
2. Anatomical Department:		
(*a*) Maintenance:		
Subjects		1,200 00
Material for preservation		400 00
Rent		1,200 00
Attendants, Biological:		
Janitor	$450 00	
A. Pride	30 00	
		480 00
Heating, light, water and repairs		700 00
Telephone		32 00
Carpenter work		50 00
Washing		25 00
Sundries		10 00
		4,097 00

Detailed Estimate of Expenditure, 1894 95.—*Continued.*

	$ c.
(*b*) Apparatus:	
Museum table, glass vessels, cost of mounting preparations, etc	250 00
Photographic room and apparatus	175 00
Other apparatus for equipment of laboratory	75 00
	500 00
3. Departments other than Anatomy:	
(*a*) Maintenance:	
Rent	1,200 00
Repairs	100 00
Light	75 00
Water	50 00
Fuel	250 00
Attendant	510 00
Preservative material	100 00
Telephone	35 00
Carpenters' supplies	40 00
	2,360 00
(*b*) Apparatus:	
Museum jars, various sizes and shapes	95 00
Microtome	75 00
Lantern (for projection purposes)	100 00
Photographic apparatus	80 00
Microscopes for use in Bacteriological Department	150 00
	500 00
4. General expenses:	
Stationery, calendars, printing, etc	400 00
Advertising	300 00
Scholarships	240 00
Medals	47 75
Sundries	75 00
Taxes	11 90
Secretariat	100 00
	1,174 65

J. LOUDON,
Acting Chairman.

January 7th, 1895.

REPORT

OF THE

COUNCIL OF UNIVERSITY COLLEGE

1893-1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO:
WARWICK BROS. & RUTTER, PRINTERS, 68 AND 70 FRONT ST. WEST.
1895.

[Copy.]

UNIVERSITY OF TORONTO,
REGISTRAR'S OFFICE, February 20, 1895.

Hon. J. M. GIBSON,
Provincial Secretary,
Toronto.

SIR,—I am directed by the Council of University College to forward to you for submission to His Honor the Lieutenant-Governor in Council, the annual report for the year 1893-94, which was approved at the meeting of the College Council held on February 19.

I have the honor to be, Sir,
Your obedient servant,

(Signed) JAMES BREBNER,
Registrar.

ANNUAL REPORT

OF THE

COUNCIL OF UNIVERSITY COLLEGE

1893-1894.

To His Honor the Honorable GEORGE A. KIRKPATRICK, LL.D., *Lieutenant-Governor of the Province of Ontario, Visitor of the University of Toronto.*

MAY IT PLEASE YOUR HONOR:

The President and Council of University College beg leave to present to your Honor the following report for the academic year ending June 30th, 1894:

By a provision of the University Act, which took effect by a proclamation of the Lieutenant-Governor in Council on November 12, 1890, the work of instruction assigned under the confederation scheme to University College is now restricted to the departments of Greek, Latin, French, German, English, Oriental Languages, Moral Philosophy and Ancient History. Under this arrangement the staff for the past session was composed of the following:

STAFF, 1893-1894.

President—JAMES LOUDON, M.A., LL.D.

Greek:

Professor—Maurice Hutton, M.A.
Lecturer—A. Carruthers, B.A.

Latin:

Associate-Professor—William Dale, M.A.
Lecturer—W. S. Milner, B.A.
Fellow—F. B. R. Hellems, B.A.

English:

Professor—W. J. Alexander, B.A., Ph.D.
Lecturer—D. R. Keys, M.A.

French:

Associate-Professor—John Squair, B.A.
Lecturer—John Home Cameron, B.A.
Fellow—C. Whetham, M.A.

German:

Associate-Professor—W. H. Vander Smissen, M.A.
Lecturer—G. H. Needler, B.A., Ph.D.
Fellow—J. P. Hubbard, B.A.

Oriental Languages:

Professor—J. F. McCurdy, Ph.D.
Lecturer—D. W. McGee, B.A.

Ethics:

Professor—J. G. Hume, M.A, Ph.D.

In the new Act it is further provided that students attending lectures in the above or other arts departments of University study shall, if not enrolled elsewhere, be enrolled in University College. The numbers registered in accordance with this regulation, together with others taking full or partial courses in University College, were as follows:

—	4th year.	3rd year.	2nd year.	1st year.	Totals.
Matriculated students	116	161	158	143	578
Occasional students	14	19	52	74	159
Totals	130	180	210	217	737

The following tables exhibit the numbers attending the Pass and Honor lectures in University College subjects:

PASS.

—	Greek.	Latin.	English.	French.	German.	Orientals.	Ethics.	Ancient History.
Fourth year	13	11	36	8	8	1	.....	.....
Third year	7	22	41	28	19	1	36	.....
Second year	35	99	61	92	97	4	.....	.....
First year	28	162	142	142	117	33	.....	117
Totals	83	294	280	270	241	39	36	117

NOTE.—In no case do the numbers given above include Honor students.

HONOR.

—	Greek.	Latin.	English.	French.	German.	Orientals.	Ethics.
Fourth year	9	9	27	16	11	2	7
Third year	14	15	51	52	45	3	13
Second year	14	15	64	56	51	....	.....
First year	23	23	69	52	47	.....	.....
Totals	60	62	211	176	154	5	20

All of which is respectfully submitted.

(Signed) J. LOUDON,
President.

UNIVERSITY COLLEGE, February 19, 1895.

THE ANNUAL REPORT

FOR

UPPER CANADA COLLEGE

FOR THE

YEAR ENDING JUNE 30TH,

1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO:
WARWICK BROS. & RUTTER, PRINTERS, &C., 68 AND 70 FRONT STREET WEST.
1895.

REPORT

OF THE

TRUSTEES OF UPPER CANADA COLLEGE

FOR THE ACADEMIC YEAR 1893-4.

To His Honor, GEORGE AIREY KIRKPATRICK,
Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOR:—

The Trustees of Upper Canada College beg to submit herewith the report of the Principal, showing the attendance of pupils for the year 1893-4, and also the statement of the Bursar, showing the receipts and expenditures for the same period.

JOHN BEVERLEY ROBINSON,
Chairman, etc.

TORONTO, 30th June, 1894.

UPPER CANADA COLLEGE, 1894.

PRINCIPAL'S REPORT.

To His Honor, the Honorable George Airey Kirkpatrick, Lieutenant-Governor of the Province of Ontario, and Visitor on behalf of the Crown, of Upper Canada College, Toronto.

May it Please Your Honor:

The Principal of Upper Canada College begs leave to present to your Honor, as Visitor on behalf of the Crown, the following report for the year ending June 30th, 1894:

Attendance.

I. The enrolment during the year ending the 30th of June last was 240; of these 122 were boarders The average attendance was about 197, or 80 per cent. of the enrolment This means that for every 100 boys enrolled 80 were in attendance every day during the whole year. The average percentage of the High Schools and Collegiate Institutes is about 60. The falling off of the attendance has been due to various causes, and in view of the misunderstanding that seems to exist regarding it, I think it proper to point out some of the causes that have helped to bring this about.

1. The removal of the College so far out of the city has brought down the attendance of junior boys; the cost of coming out by street railway is more than double that for school boys in the city; there has been no falling off in the attendance of senior day boys who are able to walk the long distance.

2. *The hard times.*—All the residential schools, and schools with high fees feel the stringency of the times. Hard times tend to increase the attendance in schools that have low fees, while they deplete schools with high fees.

3. In the face of the increasing stringency of the times, the fees have been raised. During the last five years the fees have gone up—in the case of day boys 20 per cent., in the case of boarders, 15 per cent. During this period the fees of the Collegiate Institutes of the City of Toronto ranged from $20 to $26 per year; in Upper Canada College the fee is $61, and for boarders it is $240.

4. Greater competition than ever before; new schools have been opened and old ones revived:

(1) In 1888, Bishop Ridley College was opened. The fee there is about the same as in Upper Canada College.

(2) In 1889, Woodstock College was endowed by the late Senator McMaster, enlarged and thoroughly equipped. The income from endowment, according to a published statement last year, was about $10,000. The fee there is $144 per annum for boarders and $30 per annum for day boys.

(3) In 1890, the Toronto Church School was re-organized, new premises having been purchased on Alexander street, and equipped with good class rooms and a large staff of masters. This school aims to be partly residential, several of the masters receiving boarders into their houses.

(4) In 1889, Jameson Avenue Collegiate Institute was opened. Class-room accommodation there is very complete, and it is officered by an experienced staff of masters. The salaries paid by the Toronto Collegiate Institutes are, on the whole, higher than those of Upper Canada College. They range from $1,000 to $2,600 per annum.

(5) In 1891, Pickering College was re-opened.

(6) In 1892, Harbord Street Collegiate Institute was opened. This is said to be one of the finest Collegiate Institute buildings in the Province, and its equipment of appliances and apparatus is also said to be of the best description.

(7) In 1892, Huron College for boys was opened.

(8) West Toronto Junction High School opened. The fees are $10 a year.

(9) The general high standing of schools for secondary education throughout the Province and the uniformly low fees charged, no doubt attract some who, if the fees were the same, would prefer Upper Canada College.

Of the 35 Collegiate Institutes in the Province, 11 are free; 24 charge fees that range from $5 a year to $26. There are 93 High Schools in the Province, 40 of which are free, the remaining 53 charging a fee ranging from $3 a year to $20 a year.

Although the attendance of the whole school is lower than it was last year it is a significant fact, that the attendance last session in the higher forms was larger in the upper school than it ever was before. The sixth form of last year was the largest sixth form the College ever had. The fifth form was also the largest. The falling off of the attendance has been in the middle and lower school. Since the college opened in Deer Park the attendance of day boys has kept up very well, the decrease has been in the attendance of boarders.

II. *Leaving Examinations.*—The official returns of the University and the other examinations in which candidates from Upper Canada College wrote show that there is no falling off in the quality of the work. The number that passed these examinations was as follows: Toronto University, 14; Trinity University, 5; Queen's University, 1; McGill University, 2; Royal Military College, 3. At the University examinations seven first-class honors, and fourteen second-class honors, and the following scholarships were won: The "Second General Proficiency," of Toronto University, awarded to S. E. Bolton, the head boy of the College; the "Burnside Scholarship," of the University of Trinity College, won by A. A. Macdonald. "The Frederick William Mason Scholarship" won by O. M. Biggar. During the past nine years the College has reached a scholarship standard at Toronto University Matriculation in competition with other schools of the Province no fewer than twenty-five times; for a period of nine years ending 1885, it reached this standard nineteen times. Twenty-five years ago, when the Institute and High Schools of the Province were poorly equipped, Upper Canada College, with its efficient staff, thorough equipment, and its system of valuable exhibitions attracted the best pupils from the Provincial Schools. A relatively high standard was easily maintained then, because competition was comparatively weak. There were not more than five schools in Ontario that made a pretence of doing more then pass work. At the present time there are thirty-five Collegiate Institutes, all of them fully equipped to prepare candidates for the highest honor standing at University Matriculation Examinations. There

are ninety-three High Schools doing the same work as the Collegiate Institutes, and in some cases competing successfully with them. That the College can now maintain its former position with all this competition is surely creditable. The College has reached a scholarship standing at University Matriculation every year except one during the last nine years. Few schools, if any, in the Province have been able to do this. The school that does well one year at matriculation seldom does as well at the next; the scholarship winning schools of one year are seldom the winners at the next. Not so with Upper Canada College; its record is uniformly high. The high standard of one year is repeated in the next. The annual average number of scholarships since 1885, won at matriculation, in competition with the best schools of the Province, is nearly three—a record that no other school in Ontario surpasses. Since 1841, when King's College was established, Upper Canada College has won scholarships at matriculation every year except on two occasions. No other school can claim such a record, and the most significant fact is that it has done quite as well, if not better, during recent years, when the competition was formidable, as it did in former times when the competition was feeble.

III. *The Staff.*—The decrease in the attendance was followed by a decrease in the staff. The services of two of the masters were dispensed with, W. J. Armstrong, B.A.; F. W. Terry, M.A., assistant masters; and A. Y. Scott, M.D., Science Master, who taught the science classes for two hours a day, severed his connection with the College. One striking feature that has distinguished the College in the past is the permanency of its teaching staff, and this, I feel, has enabled the College in no small degree to maintain its high standard of efficiency. No school can attain to any degree of excellence when the members of its teaching staff are constantly dropping out, and new men, unacquainted with the routine of the school and, it may be, with no professional training whatever, taking their place. Teaching is an art, and the first year of a young master's work in any school is largely tentative. If he has scholarship, communicative ability, and a sense of duty, his work improves year by year. The retirement of an efficient master, who has gained his experience in the school, is a distinct loss that cannot for a time be remedied. It is simply impossible to maintain a good school when the masters change every three or four years. This is a recognized evil in our Public Schools, and to some extent in all secondary schools. While a change of this sort may sometimes occur in a day school without inconvenience or loss, in a residential school it is simply impossible. Upper Canada College has been singularly fortunate in this respect. It has always maintained its masters, year after year, in the educational work of the College, generations of boys passing through their hands. With but one exception all the members of the present staff of masters were here when the College opened in its new quarters.

IV. *The need for a Provincial Residential School.*—That there is a need for a residential school like Upper Canada College no one who has studied the subject doubts. There are in every community families that have to send their sons from home for an education. These are in many instances liberal supporters of Public and High Schools. They are forced to support institutions that they cannot make use of themselves. It has been said, however, that the attendance of Upper Canada College should be limited to those who do not live near enough to a High School or Collegiate Institute to enjoy its advantages. Is it a fact, then, that only the families living at a distance from these schools are the ones that have to send their sons from home for an education? Is it not a fact that in every city, town and village there are families so situated, through no fault of their own, that their boys must be sent to residential schools? Is this class not as deserving of recognition in the bestowment of opportunities by the state as any of the other classes for whom large sums are annually expended?

Why is it that while ample provision is made to meet the wants of all classes in the community so far as educational facilities are concerned, that the class that contributes a large share of the taxes for the support of national education should be practically overlooked? The number of tax payers in the Province who do not make any use of the High School system is very great, greater, perhaps, than any other class for whom special provision is made by Parliament. What per cent. of the taxes for maintaining High Schools is paid by this class, it is difficult to say; a low estimate would be perhaps about 25 per cent.; that is to say one fourth of the people of the Province are compelled to support public secondary education, and yet can make no use of the High Schools. If only those who receive a direct benefit from our High Schools paid in taxes one half the amount for the support of schools for this class, who cannot by reason of circumstances over which they have no control, use the High School system, it would provide funds for several schools like Upper Canada College. Is it not then simple justice that those who are heavily taxed for secondary schools should receive something more than the indirect benefit of general education for the taxes they pay? It would be unjust to tax the Province for any part of the cost of maintaining the residence in connection with the school; the residence should be self-sustaining; it is, and always has been, self-supporting; it is for the class-room instruction that aid should be provided. Upper Canada College is the only Public Residential School in the Province; it holds an important place in our school system and it is surely entitled to support out of the residue of the property it once legally held and which was taken from it in 1888, and for which it has not as yet received any value whatever. The class-room instruction of the College should be maintained from this source to the same extent as the Collegiate Institutes and High Schools are supported from public funds. If the College received aid from endowment to enable it to pay 80 per cent. of the salaries of its masters, it would be placed upon the same footing as the other educational institutions of the Province. At the present time it is heavily handicapped, in that it has to provide out of its fees for residence, a sum sufficient to maintain not only class-room instruction, but pay off the old debts of former years. The income from endowments should be large enough to enable the College to lower its fees for resident pupils, and thus place its advantages within the reach of a larger number. Unlike other public educational institutions, the College does not ask for a grant from the Legislature; it asks for the endowment provided in the Act of 1887—the minimum endowment that an institution of this kind should have. This endowment is a charge upon the land that formed the old college site, a block of nearly ten acres in the very heart of the city, made valuable by the growth and enterprise of the citizens of Toronto, and taken from the College without compensation and given to the University.

Then it is said that the Public and High Schools can do this work, and that there are always to be found families living near these schools to take boys as boarders. This arrangement of school and boarding-house would not in any sense supply the place of the college; such a system would never succeed; it could not do the work. The fact that it is not in general use is proof of its inability to meet the wants of those who seek the assistance of the residential school. The supervision of the residence should be as thoroughly looked after, and it is as thoroughly looked after in all good residential schools, as the class-room training. The nature and extent of the house training are even more important, more difficult and more trying, than the class-room work; the watchful care of the house master is constantly in demand, and it is just here that training and skill on the part of the master count for much. Without under-

rating the healthful influence of a good home, it may be urged that educated men, specially trained to deal with the young, devoting their thought and time through life to the theory and practice of education in well equipped institutions, where the whole daily life is kept subsidiary to the main work of training, ought to attain results not to be expected from the irregular and undisciplined superintendence of even conscientious parents. Skill counts for as much in the training of the young as it does in any other business of life. In day schools the laxity of home life often neutralizes the best efforts of the best teachers. Could anything be more absurd than entrusting important work of this sort to anyone who cared to open his house to boarders? The boy is in the school for five hours a day; for a much longer time than this each day he is under the influences of his companions and their surroundings. Is it not of the highest importance that these should be carefully selected and well ordered? During the formative period of his life a boy should be under the most favorable conditions for instruction and study. Prominent among these conditions are the unity of school life, the intimate contact of student with master in social as well as other relations. This arrangement of school and house could not have the force and unity of aim that a large residential school, especially one with a history affords, in forming what is known as the "public opinion" of the school. Now this is dependent on numbers for strength, and I submit that strength of character is more likely to come from a large school than from a small one. In a large school there are so many paths to be trodden that there is no danger but that the boy whose ambition has been wounded in one will recover confidence by success in another. Nowhere has a boy so many opportunities of exercising the manly virtues as in intercourse with the members of a large residential school; he has the opportunity of learning without the bitterness of experience. The boy who succeeds in impressing himself upon his fellows and who becomes a leader in a school of this sort, is almost certain of taking the same relative position when he goes out into the world. All this would be impossible were the residence and the school not under the same governing influences. It behoves those who think that the work of a good residential school can be undertaken by a day school co-operating with boarding-houses independent of the school, to seriously study the system of great residential schools before making so rash a statement.

Then another says that this is the work for proprietary schools; it properly falls in their line of duty. In a country where the whole trend of public opinion runs in favor of a national, not a sectarian system, such an argument will not long be sustained. No public man would be supported long by public opinion who expressed himself hostile to our national school system. As years go by this feeling will become stronger, for the good results of the system appeal to everyone. It is to our schools that we look for nationalizing influences and nowhere can those ends be obtained so well as in schools composed of all classes and creeds. We look for liberalizing influences to our schools, and we are not disappointed in the search. The influence of the Public Schools, the High Schools and the University, thoroughly national in their aims, inculcate a high morality and a spirit of liberality; they are surely forces for good in the development of a national sentiment. Upper Canada College fills a place in this respect in our national system; it stands alone among the residential schools of Canada in being a national residential school. It has always inculcated a spirit of liberality and toleration—a national spirit; the College, more than any other Canadian school, has sent her sons to the front in times of national danger. Loyalty to our Queen and country has always been a characteristic of the College in the past, and was never stronger than it is to-day. This is a sentiment that can best be inculcated by a national school; it cannot be done so well by any other agency.

V.—*Inspection.*—This school has carried on its work under the full light of public inspection. It is the only residential school that lays bare its work to expert inspection of the most efficient and searching kind. No attempt is made to keep from the public what goes on under its roof. The fullest enquiry is invited, and an effort is made by everyone connected with the college to reveal the true working of the institution. The inspector appointed by the Crown spends days in going over the school. He comes unannounced, and without any warning. He goes through the school from room to room, and is in a position to state with all the authority of a trained expert just how the school does its work and fulfils the duties expected of it. By personal inspection he ascertains the range and quality of the instruction, text and reference books. He notes the method of teaching and the habits of the classes. He catches the spirit of the place; he feels its influence, and he judges of the effect of that influence in shaping the intellectual habits and the character of the pupils. Such an inspection covers masters as well as boys. And the great value of it rests in the fact that it is disinterested in character and that it focuses the attention of the staff on educational aims. Without proper aims, the school lacks definiteness and vigor. And now, what is his verdict? Let me refer you to his published statement, not only as to the quality of the class-room work, but also as to the discipline and tone of the school. His statements are as thoroughly judicial as they can well be; he has no object in glossing anything over; his instructions are explicit; he is independent of the college; he deals with every question in a thoroughly judicial spirit. Only on one or two points, vital ones I admit, does he give his opinion as to the efficiency of the school. The inspector's report regarding the class-room work of the college, the visiting physician's report regarding the sanitation of the buildings and the provision made for the comfort of the boys, and the results of the University examinations speak for themselves.

VI.—*Necessity for an Endowment to Supplement Fees.*

How far the College falls short of being self-sustaining from its income from fees alone, the following statement shows:

Year ending June 30th.	Amount received from fees.	Total expenditure.	Amount required from endowment to make good the yearly deficit.
1877	27,236 40	42,895 42	15,659 02
1878	26,252 50	42,673 07	16,420 57
1879	27,792 25	42,202 33	14,410 08
1880	26,684 79	41,241 75	14,556 96
1881	26,339 05	36,509 02	10,169 97
1882	23,773 15	47,814 89	24,041 74
1883	24,862 18	36,046 56	11,184 38
1884	27,312 50	32,375 19	12,063 69
1885	33,489 50	44,739 15	11,249 66
1886	36,216 40	46,641 85	10,425 45
1887	37,093 55	44,832 95	7,749 40
1888	40,621 63	48,557 33	7,939 70
1889	42,232 50	43,564 14	1,321 64
1890	37,828 15	43,044 63	5,916 48
1891	37,035 02	39,618 98	2,583 96
1892	46,253 20	42,227 26	4,025 94 (surplus.)
1893	37,977 25	45,658 40	7,681 15
1894	32,218 94	36,465 53	4,246 59

The average annual income from endowment for forty years ending 1892, was about $15,000.

The income from fees this year is the lowest during my principalship, but, low as it is, it is higher than it was during any year under the regimes of any of my predecessors, one year alone excepted, viz., the year ending June 30th, 1885. The decrease in the annual deficit from 1885 to 1892 was not due to a decrease in the annual expenditure, but to an increase in the fees collected, the College having attained its highest enrolment during this period.

In 1861, 50 per cent. of the total income of the College came from endowment.

In 1881 it was 40 per cent.

In 1891, when the College was transferred to Deer Park, it was 25 per cent., and the first year in Deer Park there was a surplus from the single source of income (fees) over expenditure, the first and only instance in the history of the College, when its receipts from fees were sufficient to cover the annual expenditure.

For nine years, ending June 30th, 1885, the College required to draw upon income from endowment in order to meet the current expenditure $129,956.06 or an average of $14,417.37 per annum.

For nine years, ending June 30th, 1894, $46,888.41 were required, or an average of only $5,209.82 per annum.

The failure to keep our expenditure within our income is due to the withdrawal of the endowment. The residence department of the College is self-sustaining, as it should be, and far more. The class-room department is not self-sustaining, it never was, and it never can be made self-sustaining from this single source of income, and maintain its present state of efficiency; the most rigid economy has been practised in every department of the College; the cost of maintaining the house cannot be reduced without offering a service inferior to that of former years. Reduction of salaries must follow, and with it inferior class-room instruction. If it had been the intention in the first place of making the College self-sustaining, then a mistake has been made in building and equipping on the scale of a public institution. The whole plan should have been changed; there should have been smaller buildings, smaller grounds, less extensive equipment and a lower scale of masters' salaries. The College should have been established in Deer Park on the scale of a private school, and not on that of a public institution, as it had always been conducted.

Was this the intention when the Act of 1887 was passed? No one thought so at the time; we were told that the College was to be built and equipped and that in its new home it was to receive the interest on its endowment of $100,000. If this had been done the College would have had a surplus instead of a deficit to-day.

If the block on King street had been sold in 1889, when an offer of $390,000 was made for it, which was considered by the trustees of the University too low a price, the University would have made out of the College $260,146.73 after deducting the promised endowment of $100,000 and all other charges against the block. The University now holds the College property in the hope of an increase in its value, and, in the meantime, and for the past four years, no income from endowment has come to the College, and all expenditure including $1,400.00 in pensions have to be met by current income from pupils' fees.

No public school in the Province can be carried on from its income from pupils' fees alone. The High Schools and Collegiate Institutes receive about 20 per cent. of their income from fees. They lack 80 per cent. of being self-sustaining. In all fairness 80 per cent. of the amount required to maintain the day-

school of the College should be derived from some other source than pupils' fees; the College should have just the same chance as any of the other educational institutions of the Province. Only fair play is asked for; this we have not had in more ways than in its financial concerns.

The sources of income of the High Schools and Collegiate Institutes are:

(1) Pupils' fees.

(2) Government grant.

(3) Local Assessment.

If the income is not sufficient to meet the expenditure from the first two sources, the High School Boards have the power to levy a tax on the city, town or municipality to make good their annual deficits. The average annual amount they raise in this way is about 80 per cent of their total receipts. How long would any of the other schools of the Province, doing the work that Upper Canada College is called upon to do, exist on its income from fees? What can be done in proprietary institutions in this way ought not to be expected from a public institution like Upper Canada College. Because small proprietary schools can exist as a business venture, it does not follow that a large public institution can do so. The mistake has been made in the last four years in attempting to maintain a public school on the plan of a private one. It must not be lost sight of that Upper Canada College is a public institution; it has always been carried on as such; its staff of masters, its equipment and the money invested in the plant, all go to show that the intention was to maintain it as a public institution. The amount of money invested in land, buildings and equipment is far in excess of that of any of the proprietary schools in Ontario. The salaries in private schools range from $300 to $800 or $900 per annum. It is simply impossible to keep up a high standard of efficiency in Upper Canada College on a scale of salaries such as this. While it is possible in church institutions to do this, in public institutions for obvious reasons it is impossible. It must not be lost sight of that the former exist for the church first, and men are sometimes found willing to serve their church for little more than a living. Not so with a public institution like Upper Canada College. The motives that prompt men to make heavy sacrifices is wanting; and besides, the influence and the organization of the church enable the school to bring its claim before the people in a way that a public institution cannot undertake. The congregation or parish is an agency for its school.

During the past three years we have been paying pensions to the amount of from $1,400 to $1,600 a year. These pensions are, in realty, the payment of a debt belonging to the last forty years. Every boy now in attendance is taxed for the payment of this old debt. They never should have been a charge upon the income from pupils' fees, but should be a charge upon the block of land on King Street, which was taken from the College without any value whatever being received for it and which was given to the University. [See Chap. 229, R. S. O., section 12, ss. 1.] I call attention to the matter now merely to show the burden of debts present and prospective that the only source of income left to the College (viz: pupils' fees) has to bear.

From all this it will be seen how difficult it is to carry on the work of the College relying on income from fees alone under existing conditions burdened as it is by old debts by hard times and face to face with a competition and opposition more formidable than it ever had before. If the College had received its endowment of $100,000, promised in the Act of 1887, and if it had been invested

at only 5 per cent., to-day it would have been in a good financial position, and the prestige that it has lost through its annual deficits being ascribed to mismanagement would not had happened.

If it is proposed to reduce salaries all round, and attempt to maintain the high standard of work that permanency on the teaching staff gives, it will assuredly result in bringing the College down to the level of a private school. Sixty years ago the salaries were much higher in Upper Canada College than they are to-day. While the tendency has been for the salaries to increase in all public educational institutions of the province from that time to the present, the tendency in Upper Canada College has been to decrease. It is no unimportant part of a master's duty to create and maintain in as high a degree as possible a social atmosphere in the school. Limited income makes this difficult. The removal to Deer Park has intensified the difficulty. The College is three miles from the centre of the city, and the cost of coming and going is a serious drain upon the master's income. This is a phase of the question that I fear has been lost sight of entirely, and one that, in all fairness, should be considered.

I predict, with confidence in its fulfilment, a decline in the quality of the work if an attempt is made to carry the College longer on its income from fees alone, to make it do what it never was able to do; to make it do what no public institution was ever called upon to do is now expected from the present management. It will be no longer able to compete at public examinations with the Collegiate Institutes and High Schools that are now so thoroughly equipped and liberally supported. Four years ago, when it became apparent that the College would not receive any income from endowment, I felt it a duty to speak plainly about this matter. What I then predicted has happened, only in a more aggravated form. The history of the College during the past sixty-five years and the history and experience of all public institutions in this and other lands show that pupils' fees alone are insufficient to support a work of this kind in a state of efficiency.

VII.—*The Endowment.*

In the year 1798 the Imperial Government appropriated 500,000 acres of the Crown Reserves for the support of a University and four Grammar Schools. It was intended that the portion for the University should be equal to that for the four Grammar Schools.

In the year 1825 Sir P. Maitland with the view to the speedy establishment of a University recommended an exchange of that portion of the Crown reserves which then remained to the Government for an equal quantity of the lands appropriated in 1798. In 1827 Lord Bathurst authorized this exchange; King's College was accordingly endowed in 1828 with these Crown Reserves amounting to 223,538¾ acres. One-quarter of the remainder of the original grant of 500,000 acres was set apart as an endowment for Upper Canada College. The various steps taken in its establishment were as follows:

1. The Legislature of 1829 endorsed the suggestion of Sir John Colborne to found the College and placed the matter in his hands to "originate, organize and foster" the Institution, and even requested him to call it after himself. In this year the endowment was set apart for the University.

2. The Legislature of 1830 when informed that the College had been instituted congratulated the Lieutenant-Governor on the step taken, as did also the Legislative Council.

3. The Legislature of 1831 expressed no disapproval of the fact that the College buildings were in course of erection, although informed of the circumstances.

4. The Legislature of 1832 set apart the endowment of the College and advised further endowment and the incorporation of the College.

5. The legislature of 1833 actually incorporated the College and gave legal embodiment to its own creation.

The endowment consisted of the following lands :

(1) Block A, the old site on King street, containing about 10 acres, known as Russell Square.

(2)	20,000	acres granted	December 16th, 1832.
	1,080	"	July 4th, 1834.
	42,188	"	May 16th, 1835.
	Total, 63,268		

(3) Part of block D, town of York (now city of Toronto), east of Church and north of Newgate street (now Adelaide), 5¼ acres, divided into town lots, Nov. 28th, 1834.

The total of 63,368 acres by exchange of land and by re-surveys was increased to 63,994½ acres. These lands were situated in various parts of the province. The sale of these lands, excepting Russell Square, produced an endowment that amounted in 1887 to $250,165.27 and was invested in mortgages and bonds. bearing interest at from 6 to 8 per cent. per annum.

For Russell Square, the old site on King street, the College has not received anything from the University.

The general management of the College was conducted by its own Board of Directors and Trustees from 1829 to March 1833, when, on the recommendation of His Excellency, the Lieutenant-Governor, it was transferred to the Council of King's College, by which body it continued to be directed until January 1st, 1850. From 1850 to 1885 its affairs were administered by a committee of the University Senate.

It has been said in justification of the Act of 1887 that a part of the University endowment was spent upon the College in former days, and that the block on King street would pay off this old debt. This is an unjust accusation. For over 12 years the College carried on the University work of the province. It was an appendage of that institution and managed by its senate. That the College was expected to do an important work for the University when it was founded is clearly set forth in the following preamble to the Act of 1839 :

" Whereas the advancement of education would be better promoted by devoting a part of the annual revenues of King's College for support of Upper Canada College and of Grammar Schools for several years to come than by the erection of a University in the present state of education in this province."

" And whereas Upper Canada College, with some changes easily effected, would afford sufficient accommodation to the public as a provincial seat of learning until it should be deemed requisite to erect the University."

That these recitals were carried into effect is evident from the fact that instruction was actually given in the College in subjects that afterwards formed part of the University curriculum. The course in Latin and Greek was more extensive than that included in the course in subsequent years. Besides these there were subjects taught in the College that even now, in the advanced state of secondary education, are still included in the the University curriculum.

For this higher work extending over a period of 12 years the College was surely entitled to a grant from either provincial or University funds. That

this view of the case was entertained by the legislature at the time is evident from section 68 of the Baldwin Act passed 18th September, 1849, which is as follows :

" Provided always that nothing herein contained shall extend or be con-
" strued to extend to the debt now claimed to be due by the said College to the
" said University which debt shall be and the same is hereby absolutely cancelled
" and discharged."

It will thus be seen that the College was not founded on any act of usurpation, nor was its endowment taken from the University lands. The latter institution received its full complement of 225,944 acres, or one-half of the whole amount set apart for purposes of education. Nor were the Grammar Schools robbed, as in 1832 the crown surrendered to the province 248,000 acres, being the whole unappropriated remainder of the original grant, and being all that could have been claimed on that grant. "There has been much mis-representation, and many unfounded statements have been made in the attempt to show that the College was founded on property taken by usurpation." [See article on the " College and its endowment," by R. E. Kingsford, M. A., LL. B., in the " History of Upper Canada College."]

It would be just as fair to charge the Collegiate Institutes, the University itself, that received a grant recently of $160,000, and every other public institution receiving state aid, with robbing the public ; in these cases full service has been rendered, and in the case of Upper Canada College the fullest value has been returned for sums expended upon it.

GEORGE DICKSON,
Principal.

Upper Canada College,
Toronto, June, 1894.

BURSAR'S FINANCIAL STATEMENT, 1893-4.

No. 1.

UPPER CANADA COLLEGE.

THE BURSAR'S STATEMENT of Receipts and Expenditures on Income Account for the year ending 30t June, 1894.

		$ c.
Receipts.		
Day pupils fees	$ 6,581 00	
Less rebate to J. J. Kingsmill for autumn term	12 00	6,569 00
Resident pupils fees	$24,309 41	
Less refund to B. F. Hobart	60 00	24,249 41
Medical fees		314 00
Shorthand and typewriting fees		326 50
Entrance fees		422 00
Balance 30th June, 1894		13,735 89
		45,616 80

Expenditures.

SALARIES AND AMOUNT RESERVED THEREFROM FOR RETIREMENT FUND.

To whom paid.	Service.	Amount paid to Officer.	Reserved for R. F.	
		$ c.	$ c.	$ c.
George Dickson	Principal and 1st English Master, 12 months' salary	2,405 00	195 00	
W. A. Neilson	2nd English Master, 12 months' salary	934 16	49 18	
W. S. Jackson	Dean and 1st Classical Master, 12 months' salary	1,412 50	87 50	
A. A. Macdonald	2nd Classical Master, 12 months' salary	1,135 00	65 00	
S. B. Leacock	1st Modern Language Master do	1,227 52	72 50	
O. P. Edgar	2nd do do do	950 00	50 00	
G. B. Sparling	1st Mathematical Master do	1,412 50	87 50	
D. Hull	2nd do do do	1,135 00	65 00	
J. H. Collinson	3rd do do do	665 00	35 00	
G. W. Johnson	1st Commercial Master do	1,412 50	87 50	
W. G. Armstrong	2nd do do 6 months' salary	356 25	18 75	
F. W. Terry	General Assistant Master, 2 months' salary	95 00	5 00	
Dr. A. Y. Scott	Science Master, 7½ months' salary	312 50	12 50	
R. Holmes	Drawing Master, 12 do	380 00	20 00	
Walter Robinson	Music Master, 6 do	100 00		
B. Halfpenny	Drill Instructor, 12 do	400 00		
Dr. J. Thorburn	Physician, 12 do	400 00		
C. G. Scott	Accountant, 12 do	760 00	40 00	
Mrs. S. Sewell	Matron, 12 do	285 00	15 00	
Mrs. A. E. Cameron	House-keeper 5 do	118 75	6 25	
Mrs. A. White	do (successor to Mrs. Cameron) 6 months' salary	87 50		
George Frost	Janitor, 12 months' salary	475 00	25 00	
Albert Baker	Gardener, do	190 00	10 00	
Robert Saxby	Engineer, do	855 00	45 00	
Alex. Kennedy	Fireman at different periods salary	186 66	10 00	
John Alward	do do	33 58		
Thos. Conroy	do do	25 56		
A. F. McKay	do do	76 66	3 34	
Edward Rhodes	do do	33 34		
Simon Kennedy	Night officer at different periods do	150 03	7 50	
Milton Saxby	do do	126 14	5 00	
		18,136 15	1,017 52	
	Total of salaries and Retirement Fund.			19,153 67
	WAGES, STEWARD'S DEPARTMENT.			
The Principal	To pay wages of servants			2,905 38
	PENSIONS.			
John Martland	Instalments of allowance		1,000 00	
Wm. Wedd	do		400 00	
				1,400 00
	GENERAL REPAIRS.			
James Findlay	Cutting pipe		4 00	
Keith & Fitzsimmons	Covering steam pipes		142 75	
A. R. Williams	Machinery, sundries, etc		25 17	
James Morrison Brass M'fg. Co	Repairs in engine room		33 11	
Thos. McQuain	Repairs, iron work, etc		5 50	
S. R. Plowman	do		5 45	
Bennett & Wright	Plumbing repairs		9 97	
J. W. Oram	do		10 25	
Shipway M'fg. Co	Repairing electric bells, etc		8 25	
Chas. Smith & Co	Valve for pump in engine room		5 00	
Thos. Dean	Castings		3 25	

Expenditures.—Continued.

To whom paid.	Service.	$ c.	$ c.	$ c.
	GENERAL REPAIRS.—*Continued,*			
N. D. Garland	Lumber		30 27	
C. H. Edwards	do		20 49	
John McArthur	Beeswax		15 20	
Stewart & Wood	Paints, glass, etc		77 47	
				396 13
	REPAIRING STOVES AND TINWARE.			
Gurney Foundry Co	Repairs, etc		13 46	
J. S. Hall	do		18 95	
John Milne & Co	do		20 60	
				53 01
	FUEL.			
Wm. McGill & Co	Coal, etc			2,581 32
	WATER.			
Water Works Department	Accounts		360 33	
	Less amount received from Deer Park Sanitarium		100 00	
				260 33
	TELEPHONES.			
Bell Telephone Co	Rent of telephone			90 00
	GROUNDS.			
Steele, Briggs, Marcon Seed Co	Lawn seed		3 75	
Wm. Rennie	Seeds		4 85	
				8 60
	HARDWARE.			
Aikenhead Hardware Co	Hardware, etc		137 59	
Rice, Lewis & Co	do		12 85	
George B. Meadows	do		2 38	
				152 82
	FURNITURE.			
A. R. McKinley & Co	Window shades, etc			32 86
	BEDDING AND LINEN.			
John Catto & Son	Linen, etc			26 60
	CROCKERY.			
Glover Harrison Estate	Crockery, etc		40 95	
The China Hall	do		8 70	
Wm. H. Sparrow	do		3 00	
				52 65
	DRUGS AND MEDICINE.			
J. H. Mackenzie	Drugs and chemicals			81 74

Expenditures.—Continued.

To whom paid.	Service.	$ c.	$ c.	$ c.
	STATIONERY.			
Warwick Bros. & Rutter	Stationery, etc		152 81	
Brown Bros	do		10 75	
Copp, Clark Co.	do		6 50	
Cyclostyle Co	Cyclostyle paper, etc		5 40	
				175 46
	PRINTING.			
Rowsell & Hutchison	Printing		12 60	
Presbyterian Ptg. & Pub. Co.	do		40 50	
North Ender Pub. Co	do		4 34	
				57 44
	ADVERTISING.			
Mail Printing Co.	Advertising		90 32	
Globe do	do		86 24	
Empire Ptg. and Pub. Co.	do		43 80	
Toronto World	do		24 44	
Evening Star	do		3 00	
The Week	do		12 50	
Christian Guardian	do		42 29	
Montreal Witness	do		9 50	
Canadian Baptist	do		6 00	
Canadian Churchman	do		17 00	
Canadian Ready Print. Co.	do		4 50	
Ontario Publishing Co	do		35 65	
Illustrated Publishing Co	do		10 00	
The Sheppard Publishing Co.	do		7 00	
Presbyterian Ptg. & Pub. Co.	do		17 50	
The Colonist Ptg. & Pub. Co.	do		6 00	
The Presbyterian Review	do		6 00	
Presbyterian News Co	do		7 27	
Manitoba Free Press Co	do		6 50	
The News Advertiser	do		5 00	
The J. E. Bryant Co	do		5 75	
				446 26
	PEW RENTS.			
Deer Park Presby. Church	Rent of Sittings		180 00	
Church of the Messiah	do		100 00	
Yonge St. Methodist Church.	do		12 50	
				292 50
	PRIZES.			
Williamson Book Co	Books			150 45
	PETTY CASH.			
C. G. Scott, Accountant	Disbursements			327 24
	CAB HIRE.			
Hon. John Beverley Robinson	Amount paid by him, cab hire for Board			10 00
	HORSE FEED.			
R. H. Beaty	Feed for horse		33 42	
Henry Duncan	do		36 08	
T. A. Crow	Horse shoeing		13 12	
				82 62

Expenditures.—Continued.

To whom paid.	Service.	$ c.	$ c.	$ c.
	STEWARD'S DEPARTMENT (RESIDENCE).			
Joseph Norwich	Meat		2,268 85	
The Wm. Davies Co	do		95 85	
Swan Bros	Groceries		656 00	
Eby, Blain & Co	do		758 24	
Jas. D. Grant & Co	do		70 06	
B. Sinclair	do		56 66	
Lyman Bros. & Co	do		1 75	
Pure Gold M'fg. Co	do		2 50	
Ingersoll Packing Co	do		7 45	
Miss A. Lyons	do		557 78	
James Wilson	Bread, etc		566 43	
Harry Webb	Cake for "At Home"		6 15	
Lawson Bros	Flour		24 61	
W. T. Strong	Baking powder		10 00	
R. G. Armstrong	Milk		652 80	
F. Simpson	Fruit, etc		388 55	
Robt. Barron	do		10 00	
Bowlby Bros. & Co	Preserves, etc		19 15	
Strathroy Canning Co	do and vegetables		116 97	
W. F. A. Clubine	Vegetables, etc		34 15	
W. R. Switzer	do		10 25	
Wm. Barrett	Potatoes		136 25	
N. Ferrier	do		26 50	
Lake Simcoe Ice Co	Ice		13 05	
M. Mathews	do		16 30	
John Taylor & Co	Laundry materials		192 71	
Pugsley, Dingman & Co	do		40 16	
				6,739 17
	MISCELLANEOUS.			
George Frost, Janitor	Allowance for rent		112 50	
Chas. Goulding	Temporary board for servants		35 00	
Dr. John E. White	Lectures on Botany		100 00	
Canadian General Electric Co	Electric supplies, etc		76 75	
A. R. Williams	Machinery, sundries, etc		34 28	
Wilkins & Co	Lamps		2 50	
W. J. Whitton & Co	do		2 75	
G. & J. Murray	Lamps and oil		9 14	
Gibb Bros	Coal oil, etc		40 08	
McColl Bros. & Co	Engine oil, etc		144 73	
Samuel Rogers & Co	do		24 75	
Firstbrook Bros	Sawdust		4 50	
Map & School Supply Co	Apparatus		18 55	
Rowsell & Hutchison	Books		3 25	
John C. Lander	Telegrams		3 90	
Geo. Booth & Son	Lettering in public hall		27 50	
A. H. Howard	Engrossing address to Lord Aberdeen		10 00	
O. & E. Grainger	Flowers for Governor-General's reception		5 50	
City Treasurer	Use of sewer for year 1894		51 60	
Wm. Macdonald	Costs of proceedings for collection of fees unpaid		60 00	
C. G. Scott, Accountant	Premium on bond		50 00	
			817 28	
	Less amount paid by O. P. Edgar for board of Mrs. Edgar, and laundry bill, etc	59 28		
	Less amount paid by W. J. Hallarn for old stoves, bedsteads, etc., sold to him	30 00		
	Less amount returned by Medland & Jones for premium paid in previous year	25 00		
			114 28	
				703 00

Expenditures.—Continued.

	$ c.	$ c.	$ c.
INTEREST ON BANK BALANCES.			
Amount charged by Bank of Commerce for interest on overdrawn account to 30th June, 1894			655 68
INTEREST ON RETIREMENT FUNDS.			
Amount due for interest on balances of Retirement Fund at 31st Dec., 1893, and 30th June, 1894		97 01	
Less interest allowed by Bank on separate account in Savings Dept.		52 85	
			44 16
ENTRANCE FEES.			
Amount received during year, as per other side, transferred to separate account, No. 3			422 00
			45,616 80

J. E. BERKELEY SMITH,
Bursar.

BURSAR'S OFFICE,
Toronto, 2nd July, 1894.

No. 2.

UPPER CANADA COLLEGE.

THE BURSAR'S STATEMENT of Receipts and Expenditures on Mason Medals Account for the year ending 30th June, 1894.

	$ c.
Receipts.	
Balance 30th June, 1893	27 00
Dividend, Canada Permanent Loan and Savings Co., Stock	51 75
	78 75
Expenditures.	
C. D. Creighton, Scholarship	25 00
Balance 30th June, 1894	53 75
	78 75

J. E. BERKELEY SMITH,
Bursar.

BURSAR'S OFFICE,
Toronto, 2nd July, 1894.

No. 3.

UPPER CANADA COLLEGE.

THE BURSAR'S STATEMENT of Receipts and Expenditures on Entrance Fees Account for the year ending 30th June, 1894.

	$ c.
Receipts.	
Balance 30th June, 1893	368 82
Amount received during the year, transferred from Income Account	422 00
	790 82
Expenditures.	
Williamson Book Co., periodicals	10 00
Hart & Riddell, invitation cards, etc	5 75
Presbyterian Printing & Publishing Co., printing	21 00
Geo. Booth & Son, lettering	12 50
Matthews Bros. & Co., framing pictures	5 50
Popular Science News, subscription	3 10
H. P. Davies & Co., gymnasium supplies	9 75
Chas. Potter, slides and cover glasses	3 00
Mason & Risch Piano Co., rent of pianos	138 50
F. Simpson, lemons for "at home"	5 80
Samuel Benjamin & Co., ice cream freezer	9 50
The Principal, amount expended	191 74
Balance 30th June, 1894	374 68
	790 82

J. E. BERKELEY SMITH,
Bursar.

BURSAR'S OFFICE,
Toronto, 2nd July, 1894.

No. 4.

UPPER CANADA COLLEGE.

THE BURSAR'S STATEMENT of Receipts and Expenditures on Retirement Fund Account for the year ending 30th June, 1894.

	$ c.
Receipts.	
Balance 30th June, 1893	1,418 94
Amount reserved from salaries of teachers and officers as per Statement No. 1	1,017 52
Interest allowed on balances as provided by Order-in-Council	97 01
	2,533 47
Expenditures.	
Amount at Cr. of Dr. A. Y. Scott, paid to him on leaving the service	52 28
" F. W. Terry, paid to him	51 36
" Mrs. A. E. Cameron, paid to her	6 25
" S. Kennedy, paid to him	7 50
" A. Kennedy, paid to him	10 00
" A. F. McKay, paid to him	3 34
Balance 30th June, 1894	2,402 74
	2,533 47

BURSAR'S OFFICE,
Toronto, 2nd July, 1894.

J. E. BERKELEY SMITH,
Bursar.

No. 5.

UPPER CANADA COLLEGE.

CASH BALANCES as at 30th June, 1894.

——	Dr.	Cr.
Account.	$ c.	$ c.
Income	13,735 89	
Mason Medals		53 75
Entrance Fees		374 68
Retirement Funds		2,402 74
Bank of Commerce, Savings Department	2,402 74	
Bank of Commerce (overdrawn)		13,307 46
	16,138 63	16,138 63

J. E. BERKELEY SMITH,
Bursar.

BURSAR'S OFFICE,
Toronto, 2nd July, 1894.

(No. 35).

Copy of an Order in Council respecting the payment of surplus Surrogate Court Fees to Judge Elliott, Junior Judge of the County Court of the County of Middlesex. Presented to the Legislature, 25th February, 1895. (*Not printed*).

(No. 36).

Copy of an Order in Council respecting the payment of surplus Surrogate Court Fees to Judge Mosgrove, Junior Judge of the County Court of the County of Carleton. Presented to the Legislature, 25th February, 1895. (*Not printed*).

REGULATIONS

Respecting the Algonquin National Park of Ontario.

Presented to the Legislative Assembly,

By Command,

J. M. GIBSON,
Secretary.

PROVINCIAL SECRETARY'S OFFICE,
TORONTO, 28th February, 1895.

COPY OF AN ORDER IN COUNCIL, APPROVED BY HIS HONOUR THE LIEUTENANT-GOVERNOR, DATED THE 11TH DAY OF OCTOBER, 1894.

Upon the recommendation of the Honourable the Commissioner of Crown Lands, the Committee of Council advise that the following regulations under section five of the Algonquin National Park Act be adopted:

1. The Lieutenant-Governor may from time to time, as the occasion may require, appoint a superintendent of the Algonquin National Park of Ontario, and so many rangers as the public service may demand, and the appropriations made by the Legislature for the purpose may warrant.

2. The Commissioner of Crown Lands may from time to time appoint temporary rangers for service in the said park during the hunting or open seasons and at such other times as the public interests may require.

Certified,

J. LONSDALE CAPREOL,
Assistant Clerk Executive Council, Ontario.

The Honourable,
The Commissioner of Crown Lands.

REGULATIONS

RESPECTING THE ALGONQUIN NATIONAL PARK OF ONTARIO.

MADE BY ORDER IN COUNCIL THE 7TH DAY OF JULY, A.D. 1894, UNDER SECTION 5 OF THE ALGONQUIN NATIONAL PARK ACT.

1. All visitors to The Algonquin National Park of Ontario are required to comply with the provisions of The Algonquin National Park Act (56 Vic., cap. 8) and these regulations, and it is the duty of the superintendent of the park and his staff of rangers to enforce the same.

2. All parties visiting the park are required to furnish the superintendent or rangers with their names and post office addresses, the proposed duration of their stay, the portions of the park they intend to visit, and such other information of a like kind as they may be requested to give by the superintendent or rangers.

3. Visitors are forbidden to cut down, take the bark off, or otherwise injure any standing timber.

4. Hunting, trapping, or taking game or other animals or birds of any kind, or fishing with net, trap, spear or night-line, is absolutely prohibited. Parties offending in this respect render themselves liable to a penalty not exceeding $100 for each offence, expulsion from the park, and seizure and confiscation of their firearms and ammunition and traps, lines and tackle.

5. Fishing with hook and line may be practised only under permit, to be issued by the Commissioner of Crown Lands or the superintendent of the park. No fish may be taken for other purposes than supplying food for visitors or others within the park, and fish when taken must not be carried beyond the boundaries of the park.

6. Visitors must exercise the greatest possible care and caution in the use of fire for cooking purposes, for which purposes only may fires be lit. Where possible fires must be kindled on bare rock, and where bare rock cannot be found, a site must be selected where there is the smallest quantity of dry or inflammable wood or other matter. Only down and decaying timber, fallen branches or driftwood may be used for firewood. Fires must not be left burning during absence from camp, and after using, they must be thoroughly and completely extinguished by pouring water thereon.

7. Not more than one rifle or fowling-piece and one revolver or other firearm shall be carried by any party of visitors, and if used for hunting, shooting or molesting animals (except in self-defence), or birds, such firearms shall be liable to seizure and confiscation, as above provided.

8. No visitors will be allowed to enter the park during the open season for moose and deer, viz., from the 20th of October to the 15th of November in any year.

(No. 38).

Copy of Order in Council extending the boundaries of Algonquin National Park. Presented to the Legislature, 28th February, 1895. (*Not printed*).

RETURN.

Mining Regulations made during 1894.

Presented to the Legislative Assembly,

By command,

J. M. GIBSON,
Secretary.

Provincial Secretary's Office,
Toronto, 28th February, 1895.

MINING REGULATIONS.

MADE BY ORDER IN COUNCIL, JUNE 23RD, 1894, UNDER SECTION 6 OF THE MINES ACT 1892.

1. The Inspector of Mines shall present to the Superintendent, Manager or Mining Captain of each and every working mine and mining works a book to be called the Inspector's Book, in which he shall record his visits to the mine and works, duly dated and signed, and shall set forth upon each visit thereto made by him:

(1) Extent of mining operations as shown by the number and measurement of shafts, winzes, drifts, adits, stopes, pits and open works;

(2) Machinery employed in or about the mine for drilling, hoisting, breaking, etc.;

(3) Plant for roasting, treating, milling, smelting and refining ores or metals;

(4) Condition of the mine, machinery and plant in relation to the health and safety of miners and all other employees; and

(5) Any instruction or direction authorized by The Mines Act 1892, or amending Acts, deemed necessary to further secure the health and safety of miners and other employees engaged at the mines and works.

2. The Inspector's Book shall be kept in the office of the Superintendent, Manager or Mining Captain at the mines and works, and shall be accessible to the miners and all other employees during office hours.

3. A printed copy of these regulations shall be affixed to the outside cover of the Inspector's Book, and as many copies as may be necessary shall be posted by the Inspector in or about the mine and works for the information of miners and all other employees.

RETURN

Regulations respecting Rondeau Provincial Park.

Presented to the Legislative Assembly

By Command,

J. M. GIBSON,
Secretary.

Provincial Secretary's Office,
Toronto, 28th February, 1895.

REGULATIONS

RESPECTING RONDEAU PROVINCIAL PARK.

COPY OF AN ORDER IN COUNCIL APPROVED BY HIS HONOR THE LIEUTENANT-GOVERNOR THE 8TH DAY OF SEPTEMBER, A.D. 1894.

Upon the recommendation of the Honorable the Commissioner of Crown Lands, the Committee of Council advise that the accompanying regulations be made and established under 57 Vict., Chap 15, entitled "An Act to establish a Provincial Park at Rondeau."

Certified,

J. LONSDALE CAPREOL,
Asst. Clerk Executive Council.

The Honorable
THE COMMISSIONER OF CROWN LANDS.

The Commissioner of Crown Lands has the honor to recommend to his Honor the Lieutenant-Governor in Council that the following regulations be made and established under Chapter 15 of the Acts of Ontario, 1894, entitled "An Act to establish a Provincial Park at Rondeau," as follows, that is to say:

1. No person except a duly appointed Park Ranger, his duly authorized assistants, or actual *bona fide* visitors to the said Park Ranger, shall occupy, locate or reside upon, temporarily or otherwise, any portion of the Rondeau Provincial Park, other than that for which lease, license or permit has been granted as hereinafter provided.

2. The Commissioner of Crown Lands may issue leases of portions of said Park for any term not exceeding twenty-one years, to persons desirous of erecting summer residences or habitations thereupon, at such rentals as may be fixed by him, with the right of renewal at the same or other rental in the option of the Commissioner, and subject to such conditions as to rental, occupation, construction or erection of houses or buildings, the cost and character thereof, renewal or cancellation of the leases, and otherwise, as to the Commissioner may seem reasonable and proper.

3. The Commissioner of Crown Lands may also issue licenses not exceeding two in number, for any one season, to persons of approved good character, authorizing them to occupy during periods or terms to be mentioned therein, certain described portions of the said Park, to erect thereon temporary structures for the accommodation of visitors, to keep and sell provisions and refreshments (other

than intoxicating liquors), to provide boats and other conveyances for the use of persons resorting to the Park, and for other like purposes, at a stated rental per month, payable in advance for the full term; such licenses to be for not longer than eight months in any one year, and to be subject to cancellation by the Commissioner of Crown Lands at any time upon violation of any of the terms thereof, or of any of the provisions of the Rondeau Provincial Park Act, or these regulations, and the said Commissioner shall be the sole judge as to any alleged violation in so far as relates to such cancellation.

(*a*) If any person to whom such a license is granted, his servants or agents, be convicted of having sold, given away, or otherwise disposed of any intoxicating liquors, whether on the premises held by him under license or on any other portion of the said Park, or within one mile thereof, the license held by the person so convicted shall be cancelled, and no license for occupying any portion of the said Park shall thereafter issue to such person.

(*b*) A schedule of charges to be made by any person to whom such a license is granted, for the hire of boats or other conveyances, for provisions or refreshments, or other accommodation for or service rendered to visitors, shall be submitted to and shall be subject to the approval of the Commissioner of Crown Lands, and no further or higher charges than those contained in such schedule shall be made or charged by the licensee, his servants or agents, under penalty of forfeiture of the license.

4. The Park Ranger may issue permits to visitors for camping upon such portions of the Park as he may designate. Persons so camping shall be subject to the control and supervision of the Park Ranger, shall refrain from doing any damage to the Park, and shall take all necessary precautions against danger from fire to the timber thereon, as prescribed by law or regulation of the Park Ranger, in default whereof they shall be liable to removal and exclusion from the Park by the said Ranger. Any one camping within the Park without such permit shall be deemed a trespasser.

5. Any person offending or violating against clause number one of these regulations shall, upon conviction by any of Her Majesty's justices of the peace having jurisdiction in the county of Kent, be liable to a fine of not less than $10 and not more than $30, and in default of payment thereof to imprisonment for a period not exceeding three months, with or without hard labor, and it shall be the duty of the Park Ranger to lay information and proceed against any person so offending before a justice of the peace as aforesaid

6. If any person after having been convicted of a violation of the said Act or of these regulations, in locating or settling upon, using or occupying any portion of the said Park, shall thereafter remain or continue in possession of any such or other portion thereof, or return into such possession or occupation, the Park Ranger shall forthwith make complaint to any of Her Majesty's justices of the peace for the county of Kent, who shall thereupon issue an order or warrant to the Park Ranger or to any county constable to remove such offender from the Park, and to keep him removed therefrom, and the Park Ranger or the said constable shall obey the said warrant and may call to his aid all needed assistance to enable him so to do. Any person for the removal of whom such last mentioned warrant has been issued, or who has been removed from the said Park thereunder, or who has been theretofore proceeded against and fined under clause five of these regulations, who shall return to the said Park and use or occupy any portion thereof except under lease, license or permit as hereinbefore provided, shall, upon complaint of the Park Ranger to any justice of the peace for the

county of Kent, be subject to a further fine of not less than $20 and not more than $50, and in default of payment thereof to imprisonment in the county jail for a period not exceeding three months.

7. No cattle, horses or pigs, other than those owned by or in charge of the Park Ranger, shall be permitted to run at large in the Park, and the owner or owners of any such animal or animals so running at large therein shall be subject to a fine not exceeding $5 for each such animal, to be recovered before any justice of the peace for the county of Kent.

8. No timber on any land leased for residential purposes, except so much as is actually necessary to be removed to make room for the building and reasonable access thereto, shall be cut or removed, and then only by permission of the Park Ranger first had and obtained, and under his immediate supervision and direction, under a penalty not exceeding $5 for every tree or shrub so cut or removed, to be recovered by the Park Ranger together with the value of the tree or shrub before any justice of the peace for the county of Kent.

9. Isaac Gardiner, Park Ranger, shall be and is hereby appointed Fishery Overseer under chapter 32 of the Revised Statutes of Ontario, with authority as such in and over the lakes and waters contiguous to the Rondeau Provincial Park, without additional salary.

ARTHUR S. HARDY,
Commissioner.

Toronto, 6th September, 1894.

(No. 41).

Bursar's Statement, shewing disbursements and estimated revenue of University of Toronto, for the year 1894-5. Presented to the Legislature, 28th February, 1895. (*Not printed*).

RULES AND REGULATIONS

For the control and working of Diamond Drills. Approved by His Honor, the Lieutenant-Governor of Ontario, September, 1894.

Presented by Command,

J. M. GIBSON,
Provincial Secretary.

Provincial Secretary's Office,
Toronto, 28th February, 1895.

RULES AND REGULATIONS

FOR THE

CONTROL AND WORKING OF DIAMOND DRILLS.

Approved by His Honor the Lieutenant-Governor, September 15th, 1894.

1. The Bureau of Mines may employ diamond drills to explore public and private lands in the Province for ores or minerals subject to the following Rules and Regulations, made under authority of The Mines Act 1892, and the amending Act of 1894 :

2. The Commissioner of Crown Lands may request a skilled and competent person to examine any locality or territory of the public lands of the Province, and upon receiving a report of a reasonable prospect of ores or minerals being found thereon he may require an exploration of the lands to be made with a diamond drill and may deal with them as provided in the third clause of section 12 of The Mines Act 1892.

3. The Commissioner of Crown lands may grant the use of a drill to explore mines or mineral lands in the Province owned or leased by any corporation, company, syndicate, firm, person or persons when application is made therefor in writing to the Director of the Bureau of Mines, subject to the following terms and conditions, viz.:

The applicant or applicants to give a bond in the form of Schedule A hereunder, or to the like effect, with sufficient sureties, or other security to the satisfaction of the Commissioner, for payment to the Treasurer of the Province at Toronto of costs and charges for—

(1) Carrying the drill and all necessary plant to the mine or location and setting the same in place for running under proper cover ;

(2) Working the drill, including superintendence and labor, fuel and water ;

(3) Loss or breakage of bits, core lifters and core shells ;

(4) Wear or loss of diamonds, to be ascertained by weight and computed at twenty-five dollars per carat ;

(5) Other repairs of breakages and wear and tear of machinery, such sum per month as shall be estimated and certified by the mechanical manager, subject to appeal to the Director of the Bureau of Mines ;

(6) Together with an additional charge of fifty dollars per month for use of the drill from the date of report to the Commissioner that the mine or land has been shown through the use of the drill to be a valuable mineral property, where work is continued thereafter.

All such costs and charges firstly above mentioned to be paid within one month from the date of putting the drill in place ready for operation, and all other costs and charges at the end of each and every month thereafter during the continuance of the work.

But to encourage the exploration of mines and mineral lands and to demonstrate the utility of diamond drills in such work, it is provided that forty per cent. of the aggregate of costs and charges above enumerated (except as to the charge mentioned above in number six) shall be borne by the Bureau of Mines in 1894, thirty-five per cent. thereof in 1895, thirty per cent. thereof in 1896, and twenty-five per cent. thereof each year thereafter until the end of the year 1900. Nevertheless no part of such costs and charges shall be borne or assumed by the Bureau of Mines after a report has been made to the Commissioner by the Director and Geologist and Mineralogist of the Bureau, based upon examination of the cores of the drill and other satisfactory evidence, showing that the mine or mineral land under exploration has been shown by the use of the drill to be a valuable mineral property.

4. Applications for use of drills will be dealt with in the order of the date of receipt; but satisfactory evidence may be required to show that there is a reasonable prospect of valuable ore or mineral being found upon a property before the granting of a drill to explore it is sanctioned by the Commissioner of Crown Lands. The Commissioner may also in writing give precedence to a later application where in the case of an earlier one there is neglect or delay in completing the preliminary arrangements, or (to prevent loss of time and extra cost of transportation) where two or more applications are from the same or a contiguous locality, but in such case he shall state in writing the reasons for giving such precedence. The Lieutenant-Governor in Council may also give precedence to an application to explore a recent and promising discovery of ore or mineral where it appears to be in the public interest that a speedy test should be made, or where substantial exploratory or mining work is being carried on, or for such other special reasons as may appear to best serve and promote the interests of mining in the Province, and in such case the Order in Council shall set forth the reasons for giving such precedence.

5. The Commissioner of Crown Lands may upon the report of the Director of the Bureau of Mines suspend or terminate the working of a drill at any time, and the corporation, company, syndicate, firm, person or persons for whose benefit such drill was being used shall not have any claim to compensation on account of such suspension or termination.

6. A competent mechanical manager appointed by the Lieutenant-Governor upon such terms as to a trial and otherwise as may be deemed desirable shall have the control and working of each drill, subject to the instructions of the Director of the Bureau of Mines, and shall be responsible for the efficient and economic working of the drill, and for the care and safe-keeping of the drill, boiler, pump, equipment and stores. He shall also be required—

(1) To have oversight of the boiler, conduct the running of the drill, set or refit the diamonds when necessary, keep an accurate daily record of the progress of borings, and preserve the cores in boxes supplied for the purpose in such a way as to show a complete and continuous section of the rocks, formations, veins or mineral deposits so explored;

(2) To superintend transportation of the plant and its removal from one site to another, to set it up in a proper manner where borings are required to be made, and to erect a sufficient cover for the drill and boiler so that operations may be carried on in any weather;

(3) To act upon the advice of the person authorized to mark the site and indicate the course of each boring and the depth to which it shall be continued, unless otherwise instructed by the Director of the Bureau of Mines;

(4) To keep an accurate and detailed account of all expenses of transportation, labor, repairs, fuel, supplies, etc., required in connection with the employment of the drill, and to make a report thereof monthly to the Director of the Bureau, and to transmit therewith all bills and vouchers for the same;

(5) To make a weekly report of progress to the Director of the Bureau while in the field, and to report forthwith any stoppage of operations due to accident or other cause;

(6) To make a detailed report to the Director of the Bureau of the operations of each year.

7. The mechanical manager shall not impart or reveal the knowledge or information acquired by him in exploring with the drill, nor exhibit the cores and cuttings of the drill, except to the Director of the Bureau of Mines, or to any person whom the Director may designate in writing, or to an authorized agent or representative of the corporation, company, syndicate, firm, person or persons for whom the property is being explored, and he shall dispose of the cores and cuttings of the drill only as he may be instructed by the Director.

8. The mechanical manager shall give a bond with sufficient sureties or other acceptable security in a sum of not less than one thousand dollars, for the faithful performance of his duties as mechanical manager and for the right care and use of the plant, equipment and stores placed in his charge.

9. The Commissioner of Crown Lands may when necessary employ a fireman to assist the mechanical manager in operating each drill at such rate of wages and allowance for expenses as may be agreed upon for the period of his employment in the field, reckoned from the day of going out to the day of returning, and the person so appointed shall in all matters appertaining to his duties be subject to the orders of the manager.

SCHEDULE A.

Form of Bond.

Know all men by these presents that we of the of in the of , , of the of in the of , , and of the of in the of , are respectively held and firmly bound to Our Sovereign Lady the Queen, Her Heirs and Successors, in the several sums following, that is to say: the said in the sum of dollars, the said in the sum of dollars, and the said in the sum of dollars, lawful money of Canada, to be paid to Our Sovereign Lady the Queen, Her Heirs and Successors, for which payments well and truly to be made we bind ourselves severally and respectively and not each for the other, and our respective heirs, executors and administrators firmly by these presents. Sealed with our seals and dated this day of , 18 .

Whereas by section 15 of an Act passed by the Legislative Assembly of the Province of Ontario in the fifty-seventh year of Her Majesty's reign, entitled "An Act relating to Mines and Mining Lands," it was provided that the Commissioner of Crown Lands might purchase not more than two diamond drills to be used in exploratory drilling of ores or minerals in the Province under Rules and Regulations to be made by the Lieutenant-Governor in Council, and whereas the above-named has applied to the said Commissioner for the use of a diamond drill purchased under authority of the said section to explore for ores or minerals upon the following lands, that is to say: of which lands the said is (*owner or lessee*), and the said Commissioner has agreed to allow the use of the said drill to the said for the purposes aforesaid under and subject to the Rules and Regulations made and approved by the Lieutenant-Governor in Council dated the fifteenth day of September, 1894.

Now, the condition of this obligation is such that if the said shall well and truly pay to the Treasurer of the Province of Ontario all the costs and charges of and incidental to the use of the said drill upon the said lands to the amounts and at the times and places and in the manner prescribed by the Rules and Regulations, and shall in all respects observe and comply with the terms of the said Rules and Regulations, then this obligation to be void, otherwise to be and remain in full force and virtue.

Signed, sealed and delivered in the presence of

EXTRACTS FROM THE MINING LAWS.

Sub-section 3, section 12, of The Mines Act 1892 (55 V. c. 9):

(3) Where any locality or territory is shown to be rich in mines and minerals, the Lieutenant-Governor in Council may by regulation set apart the whole or part of such locality or territory, and may fix the price per acre at any greater sum than is hereinbefore mentioned, or may temporarily withdraw the same from sale.

Section 15 of An Act relating to Mines and Mining Lands (57 V. c. 16):

15. The Commissioner of Crown Lands may, out of the moneys voted for that purpose, purchase not more than two diamond drills to be used in exploratory drilling of ores or minerals in the Province, under Rules and Regulations to be made by the Lieutenant-Governor in Council.

The regulations shall, amongst other things, provide:

(1) For the control and working of the drills under the direction of a person or persons employed for the purpose by the Bureau of Mines.

(2) As to the payment of freight charges where the drills are used upon mines or lands other than those owned by the Crown;

(3) As to the application for the use of the drills and the method of dealing therewith.

(4) As to the charges for the use of the drills and for damages thereto, or wear or tear connected therewith, and otherwise as to the Lieutenant-Governor in Council shall seem meet.

(No. 43).

Return to an Order of the House of the seventh day of March, 1894, for a Return shewing (1) the actual loss, over and above insurance, sustained by the Province by the burning of the Toronto University building; (2) names of each insurance company, amount paid by each, amount insured in each at the time of the fire, dates of payment; (3) the present amount of insurance held by the Government on the new Parliament Buildings, University and Upper Canada College, giving names of each company and the amount each carries, and the rate *per* $100.00; (4) what loss was sustained over and above insurance on the burning of the Central Prison. Presented to the Legislature, 1st March, 1895. Mr. *Ryerson.* (*Not printed*).

(No. 44).

Copy of Agreement between Her Majesty the Queen, E. V. Douglas and Francis H. Clergue, for the erection and equipment of pulp and paper mills at Sault Ste. Marie. Presented to the Legislature, 4th March, 1895. (*Not printed*).

ANNUAL REPORT

OF THE

COUNCIL OF THE UNIVERSITY

OF

TORONTO.

1893-4.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO.
WARWICK BROS. & RUTTER, Printers, &c., 68 and 70 Front Street West.
1895.

ANNUAL REPORT

OF THE

COUNCIL OF THE UNIVERSITY OF TORONTO

1893-1894.

To His Honor the Honorable GEORGE A. KIRKPATRICK, LL.D., *Lieutenant-Governor of the Province of Ontario, Visitor of the University of Toronto.*

MAY IT PLEASE YOUR HONOR:

The Council of the University of Toronto beg leave to present to Your Honor the following report for the academic year ending June 30th, 1894.

In accordance with the provisions of the new University Act, the University Council is now charged with the work of instruction in Arts, Law and Medicine; the subjects in the Faculty of Arts being, however, restricted to Mathematics, Physics, Mineralogy and Geology, Chemistry, Zoology, Botany, Physiology, History, Ethnology, Comparative Philology, History of Philosophy, Logic and Metaphysics, Italian and Spanish, and Political Science.

Under this arrangement the members of the teaching Faculties of Arts and Law for the past session were as follows:

STAFF 1893-1894.

FACULTY OF ARTS.

President—JAMES LOUDON, M.A., LL.D.

Physics:

Professor—James Loudon, M.A., LL.D.
Demonstrator—W. J. Loudon, B.A.
Lecturer—C. A. Chant, B.A.
Assistant Demonstrator—J. C. MacLennan, B.A.
Fellow—G. F. Hull, B.A.

Mathematics:

Professor—Alfred Baker, M.A.
Lecturer—A. T. DeLury, B.A.
Fellow—G. F. Hull, B.A.

Chemistry:

Professor—William H. Pike, M.A., Ph.D.
Demonstrator—W. L. Miller, B.A., Ph.D.
Demonstrator—W. H. Ellis, M.A., M.D.
Fellow—J. Munro, B.A.
Lecture Assistant—F. B. Allan, B.A.

Biology:

Professor—R. Ramsay Wright, M.A., B.Sc.
Lecturer—E. C. Jeffrey, B.A.
Assistant Demonstrator—R. R. Bensley, B.A., M.B.
Fellow—T. McCrae, B.A.

Physiology:

Associate Professor—A. B. Macallum, B.A., M.B., Ph.D.

Mineralogy and Geology;

Professor—Edward J. Chapman, Ph.D., LL.D.
Fellow—W. A. Park, B.A.

History and Ethnology:

Lecturer—G. M. Wrong, B.A.

Comparative Philology:

Professor—Maurice Hutton, M.A.

Political Economy and Constitutional History:

Professor—James Mavor.
Fellow—C. A. Stewart, B.A.

Philosophy:

Professor of History of Philosophy—J. G. Hume, B.A., Ph.D.
Lecturer and Demonstrator—A. Kirschman, Ph.D.
Special Lecturer—F. Tracy, B.A., Ph.D.

Italian and Spanish:

Associate Professor—W. H. Fraser, B.A.
Fellow—F. J. A. Davidson, M.A.

Faculty of Law:

Political Economy and Constitutional History.
Professor—James Mavor.
Roman Law, General Jurisprudence and History of English Law.
Professor—The Hon. William Proudfoot.
Constitutional and International Law.
Professor—Hon. David Mills, LL.B.

The following tables exhibit the numbers attending the pass and honor lectures in University subjects:

PASS.

Subjects.

—	Mathematics.	Physics.	Chemistry.	Biology.	Mineralogy and Geology.	Philosophy.	Logic.	Political Science.	History.
Fourth year	7	.....	.....	.....	.....	19	.....	25	.....
Third year	.....	33	.....	.....	.....	29	.....	11	55
Second year	2	34	11	.....	40	175	137	.....	107
First year	187	98	.....	131	.....	.....	.....	.....	.....
Totals	196	165	11	131	40	223	137	36	162

NOTE.—In no instance do the numbers given above include honor students. Instruction in Physics, Biology and Chemistry was given to 54 students of the first year in Medicine; in Mathematics and Chemistry to 59 students, and in Physics to 43 students of the first year in the School of Practical Science.

HONOR.

Subjects.

—	Mathematics.	Physics.	Chemistry.	Biology.	Mineralogy and Geology.	Philosophy.	Political Science.	History.	Italian.	Spanish.	Ethnology.
Fourth year	3	4	3	17	24	8	40	.....	3	3	25
Third year	.....	14	23	22	23	19	47	46	43	43	.....
Second year	21	23	43	35	38	24	50	58	60	59	.....
First year	40	44	50	46	46	.....	.....	.....	57	.....	.....
Totals	64	85	119	120	131	51	137	104	163	105	25

NOTE.—The second year lectures in Chemistry and the fourth year lectures in Biology were attended by 61 students of the second year in Medicine. Instruction in Mathematics and Physics was given to 34 students of the second year in the School of Practical Science.

The following table exhibits the numbers taking practical work in the University Laboratories:

Laboratories.	Physical.	Chemical.	Mineralogical.	Biological.	Psychological.
Fourth year	4	3	4	17	8
Third year	15	23	23	22	19
Second year	23	43	38	35	.....
First year	44	.....	.....	46	.....
Totals	86	69	65	120	27

NOTE.—Practical instruction in Chemistry and Biology was given to 54 students of the first year and to 61 students of the second year in Medicine and in Physics to 101 students of the School of Practical Science.

The members of the teaching staff in medicine for the last session were as follows:

FACULTY OF MEDICINE.

Professor of Surgery:
W. T. Aikins, M.D., Tor., LL.D.

Professor of Clinical Surgery:
I. H. Cameron, M.B., Tor.

Professor of Clinical Surgery:
L. McFarlane, M.D., Tor.

Associate Professor of Surgery and Clinical Surgery:
G. A. Peters, M.B., Tor., F.R.C.S., Eng.

Professor of Anatomy:
J. H. Richardson, M.D., Tor.

Associate Professor and Demonstrator of Anatomy:
A. Primrose, M.B., C.M., Edin.

Lecturer in Anatomy:
H. Wilberforce Aikins, B.A., M.B., Tor.

Senior Assistant Demonstrator of Anatomy:
F. N. G. Starr, M.B., Tor.

Assistant Demonstrators of Anatomy:
F. W. Cane, M.B., Tor.
A. R. Gordon, M.B., Tor.
B. E. McKenzie, B.A., M.D., Tor.
W. B. Thistle, M.D., Tor.
F. Winnett, M.D., Tor.

Professor of Medicine and Clinical Medicine:
J. E. Graham, M.D., Tor., M.R.C.P., Lond.

Associate Professor of Medicine and Clinical Medicine:
A. McPhedran, M.B., Tor.

Lecturer on Clinical Medicine:
W. P. Caven, M.B., Tor.

Professor of Pathology:
J. Caven, B.A., M.D., Tor.

Demonstrator of Pathology:
J. A. Amyot, M.B., Tor.

Professor of Pharmacology and Therapeutics:
J. M. MacCallum, B.A., M.D., Tor.

Demonstrator of Materia Medica and Elementary Therapeutics:
C. F. Heebner, Phm. B., Tor.

Professor of Gynæcology:
U. Ogden, M.D., Tor.

Professor of Obstetrics:
A. H. Wright, B.A., M.D., Tor.

Professor of Ophthalmology and Otology:
R. A. Reeve, B.A., M.D., Tor.

Clinical Lecturer on Ophthalmology and Otology:
G. H. Burnham, M.D., Tor., F.R.C.S., Edin.

Clinical Lecturer on Laryngology and Rhinology:
G. R. McDonagh, M.D., Tor.

Professor of Hygiene:
W. Oldright, M.A., M.D., Tor.

Medical Lecturer on Medical Jurisprudence:
B. Spencer, M.D., Tor.

Legal Lecturer on Medical Jurisprudence:
Hon. David Mills, LL.B., Q.C.

Extra Mural Professor of Mental Diseases:
Daniel Clark, M.D., Tor.

Professor of Physics:
James Loudon, M.A., LL.D.

Lecturer on Physics:
C. A. Chant, B.A.

Professor of Chemistry:
W. H. Pike, M.A., Oxon., Ph.D., Goettingen.

Lecturer on Chemistry;
W. L. Miller, B.A., Ph.D., Munich.
F. B. Allan, B.A.

Lecturer on Chemistry and Toxicology:
W. H. Ellis, M.A., M.B., Tor.

Professor of Biology:
R. Ramsay Wright, M.A., B.Sc., Edin.

Professor of Physiology:
A. B. Macallum, B.A., M.B., Tor., Ph.D., Johns Hopkins.

Assistant Demonstrator in Biology:
R. R. Bensley, B.A., M.B., Tor.

(Sgd.) J. LOUDON,
President.

February 25, 1895.

(No. 46).

Statement of the affairs of the Toronto General Trusts Company for the year 1894. Presented to the Legislature, 7th March, 1895. (*Not printed*).

NINTH ANNUAL REPORT

OF THE

COMMISSIONERS

FOR THE

QUEEN VICTORIA NIAGARA FALLS PARK,

BEING FOR THE YEAR

1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO:
WARWICK BROS. & RUTTER, PRINTERS, 68 AND 70 FRONT ST. WEST.
1895.

NINTH ANNUAL REPORT

OF THE

COMMISSIONERS

FOR THE

QUEEN VICTORIA NIAGARA FALLS PARK.

To the Honorable GEORGE AIREY KIRKPATRICK,
Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOR:

The Commissioners of the Queen Victoria Niagara Falls Park beg to submit their Ninth Annual Report, for the year ended 31st December, 1894.

The year has been an exceptionally busy one for the Commissioners, and many matters of great importance to the Park and its outlying precincts have received their careful consideration and decision. In their report for 1893 the Commissioners made reference to the application of the Niagara Falls Park and River Railway Company for permission to double-track their line, on the ground that the Company's experience in handling the traffic of the road during 1893 had demonstrated that the second track was not only essential to the success of the road but absolutely necessary to the safety of the travelling public.

While the Commissioners recognized the fact that in the original agreement made with the promoters of the railway, provision is made, under certain regulations, for a double track, and while they fully admitted the force of the arguments advanced by the Railway Company as to its pressing necessity, they found, nevertheless, there were many serious difficulties in the way of giving their assent to the proposal. Of these difficulties one of the most formidable was the actual want of space (in some places in the park and also in front of the town) for a second track, without unduly encroaching on the public roadway. At such places it was found absolutely necessary either to restrict the company to a single track or bring the two tracks so close together as to practically occupy the space of only one.

Another serious difficulty was the fear that a second railway track through the park would be very objectionable from a scenic point of view, and seriously affect the appearance of the grounds at some of their most interesting points. This subject received much consideration at the hands of the Commissioners, and the system of treatment decided on as best suited to the circumstances of the case was carefully defined.

An agreement was finally arrived at with the Railway Company embodying plans and detailed specifications of construction and finish throughout, under which the work was allowed to proceed, and the second track was completed in time for the season's business. The text of the agreement is as follows:

"This agreement made the 27th day of March, one thousand eight hundred and ninety-four, between the Niagara Falls Park and River Railway Company, of the first part, and the Commissioners for the Queen Victoria Niagara Falls Park, hereinafter called the Commissioners, of the second part.

"Whereas, the Railway Company propose to double track their present single line of electric railway, between Queenston and Chippawa, and have applied to the Commissioners to consent to such work in pursuance of the Act incorporating the Niagara Falls Park and River Railway Company (55 Victoria, Chap. 96) and schedule B thereto.

"And in pursuance of such application the parties hereto have agreed, subject to the approval of the Commissioner of Public Works of Ontario, that the said single line of electric railway shall be made a double track electric railway between Queenston and Chippawa, except at certain points, in accordance with the terms, agreements, provisions and covenants contained in these presents and in the memorandum hereunto annexed, which, with the plans relating thereto, are hereby declared to be and are made part and parcel of this contract;

"And whereas, the present single line of railway is located, or is intended to be located in accordance with the plans of the said line of single railway submitted by the Railway Company to the Commissioner of Public Works, on the eighth day of April, 1892, accompanied by duly identified specifications, dated fourth December, 1891, and deposited in the Department of Public Works, which plan or plans, specifications and matters so submitted to the Commissioner of Public Works, received the approval, on the said eighth day of April, 1892, of the Honorable Richard Harcourt, Acting Commissioner of Public Works, in the terms of a memorandum in writing signed by him on the said eighth day of April, 1892, which said plans and specifications so approved as aforesaid relate to the location of the said present line of single railway, and in so far as applicable, are to be taken in connection with the works and matters appurtenant thereto, to be done and completed, as the doubling of the said single line of railway in the manner hereby agreed to be done;

"And whereas, the draft of the memorandum hereto annexed was, on the fifteenth day of March instant, submitted jointly to the Commissioner of Public Works of Ontario in the person of the Honorable Richard Harcourt, a member of the Executive Government of Ontario, and Acting Commissioner of Public Works, by the President and representatives of the Railway Company, and by John W. Langmuir, Chairman of the said Commissioners, for the consideration and approval of the said Commissioner of Public Works;

"And the said Acting Commissioner having directed that upon the said draft memorandum so submitted to him with certain changes made being embodied and plans relating thereto, together with a proper agreement duly executed by the Railway Company and the Commissioners, under their respective corporate seals, containing proper covenants and stipulations as he should deem proper for the due and satisfactory completion of the works in the said memorandum contained, and submitted to him (with the said changes being duly embodied therein) the consent and approval of the Commissioner of Public Works to the location and construction of a double track to be completed in accordance with such agreement, together with the other works contained in the said

memorandum, and plans hereinbefore mentioned, would be signified by endorsing such consent on the said agreement under the proper hand of the Commissioner of Public Works;

"And whereas these presents have been prepared and executed in pursuance of the matters hereinbefore recited;

"Witnesseth, that in consideration of the matters hereinbefore recited, the Railway Company covenant with the Commissioners in manner following, that is to say:

"1st. That the Railway Company will execute, construct and complete all and singular the works in the memorandum hereunto annexed, mentioned and intended to be performed, executed and constructed and completed in the best and most workmanlike manner, in the manner required by and in conformity with the said memorandum, and the plans and drawings referring thereto, which said memorandum, plans and drawings are hereby declared to be and are made part and parcel of this contract, and to the complete satisfaction of the Commissioner of Public Works of Ontario for the time being.

2nd. And no alterations, omissions or deviations from the works described in the said memorandum and as shown on the plans (if shown) therein referred to, shall be permitted unless such alterations, omissions or deviations shall have been first approved by the Commissioners by a resolution of the Board of Commissioners communicated to the said Railway Company signed by the Chairman of the Commission.

3rd. That in case of any of the works, or any part or parts thereof to be done, executed and completed by the Railway Company under the first clause of this contract shall, either in the progress of the work being done by the railway company or before its final completion to the satisfaction of the Commissioner of Public Works, as hereinbefore provided, be not proceeded with or done to the complete satisfaction of the Commissioners, the Railway Company will, within eight days after written notice shall have been given to them by the Commissioners of the objections, omissions or matters charged to be improperly done or omitted to be done, duly execute or complete the same in a good, sound and workmanlike manner, to the complete satisfaction of the Commissioners, if the said works, omissions or matters in said notice required to be done are in accordance with the said memorandum hereto annexed and the plans relating thereto as aforesaid or such as should be done in relation thereto.

Signed, sealed and delivered
in the presence of

(Sgd.) WM. T. JENNINGS,
(Sgd.) JAMES WILSON,
as to signature of J. W. Langmuir.

(Sgd.) E. B. OSLER,
President.

(Sgd.) J. W. LANGMUIR,
Chairman.

"Memorandum of works to be performed by the Niagara Falls Park and River Railway Company in connection with the double tracking of the line and the proper completion of the works required under the agreement with the Queen Victoria Niagara Falls Park Commissioners of December 4th, 1891, and of the Act of incorporation.

"For convenience the line will be divided into four sections, viz.:

"1. From Chippawa to the southeast limit of the Park, a distance of 1 and 3-10 miles. (See plan A).

"2. The Park proper, or from the southeast limit of the Park to the Clifton House, a distance of 2 miles. (See plan B, and amended plans Nos. 1, 2 and 3).

"3. From the Clifton House to the north limit of the Town of Niagara Falls, 2 and 2-10 miles. (See plan B, and amended plans Nos. 3, 4 and 5).

"4. From north limit of the town to Queenston, 6 miles. (See plan A).

"The works in these several sections which are required to be done will be separately defined.

SECTION 1.

"*Location*.—The new track to be located as shown by a thin red line on plan A herewith, the distance between the tracks to be eight (8) feet, or thirteen (13) feet centre to centre.

"*Grading*.—The grading, ditching, etc., etc., to conform to the gradients of the existing track. All cuttings and embankments to have the slopes cleanly cut to a pitch of one and a half horizontal to one vertical, and in all cases where material is borrowed or wasted, the ground shall be levelled off and left smooth and even, and with the slopes of all embankments or cuttings to be sown with grass seed.

"Cattle passes and culverts are to be extended sufficiently to meet the requirements of the case.

"*Permanent Way*.—All rails, fittings, guard rails, ties, ballasting, etc., to be equal in quantity and quality to the existing work.

"*Electrical Equipment*.—The centre-pole system will be adopted in this portion of the line, and the brackets, wiring, etc., shall be patterned after that now in use.

SECTION 2.

"Through the Park proper double tracking may be laid, excepting at the following points, where there shall be a single track only:

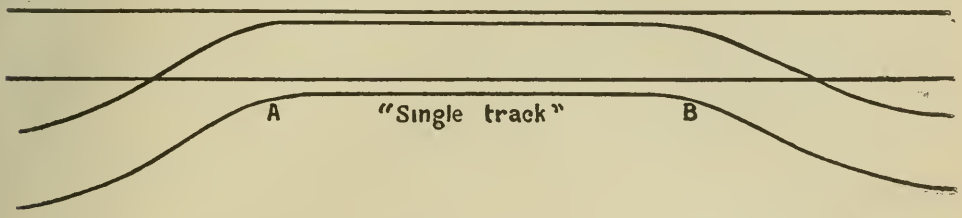
"(*a*) From a point one hundred and forty (140) feet south of the south side of Table Rock House to a point one hundred and twenty (120) feet north thereof, or a total distance of two hundred and sixty (260) feet.

"(*b*) From a point twenty-five (25) feet south of the south side of the restaurant building to a point four hundred and ten (410) feet north thereof, or a total distance of four hundred and thirty-five (435) feet.

"Should it be shown that the operation of a single track at the points above specified is dangerous to the public, the Railway Company shall have the right to place a double track to the rear, or west side, of the buildings referred to, viz.: the 'Table Rock House' and the 'restaurant building,' in which case the present single track in front thereof shall be removed.

"In each case the distance given is to cover the space where there shall be one track only, the leads to be beyond this distance in all cases.

"At the several points where single track is required the railway company may either lead the second track into one pair of rails, by means of switches, or carry the two pairs of rails continuously over the distance specified, but laid as closely together as the flanges will permit; thus, in the figure, the distances between A and B shall be considered as single track:



"Crossing the bridges on Dufferin Islands the distance apart of tracks to be reduced to suit the existing bridge structures.

"The location of the second track in the Park proper shall be as indicated on the large scale plan marked B, but with certain amendments thereto, as defined on the several plans marked numbers 1, 2 and 3, and more particularly described as follows:

"Commencing at the southeast limit of Park, the second track shall be located on the landward side of existing one as far as the Dufferin Islands bridge. Across the Dufferin Islands the present track to be shifted to one side sufficiently to permit of the tracks being laid as above specified.

"From the bridge at Clark Hill to a point opposite the gravel pit the second track shall be on the landward side of the present one, which will remain in its present location.

"Between the gravel pit and the head of Cedar Island the tracks may be adjusted to suit the siding at the 'gap,' as shown on the plan.

"From the middle of Cedar Island to the north end thereof the present track shall be slewed over towards the river, a distance of four feet, and the second track placed on the landward side. From Cedar Island to Table Rock the tracks to be placed as shown on plan No. 1.

"North of Table Rock House the present siding will be extended towards the restaurant building until the switch is within twenty-five (25) feet of the south side thereof. From this point there shall be a single track for a distance of four hundred and thirty-five (435) feet, or to a point beyond the road crossing, as shown on plan No. 2.

"North of the roadway crossing, the existing and new tracks shall be adjusted, as shown on plan number 2; they must be located so as to allow a clearance of twelve (12) feet between the present railing along the edge of the cliff and the nearest rail at the narrowest points.

"Near the north end of the Park the tracks are to be located as shown on plan No. 3.

"No sidings or cross-overs are to be laid within the Park without the consent of the Commissioners being first had in writing, and all existing sidings are to be removed excepting at such points, as they will form a part of the double track, as has been particularly described and shown on plans.

"*Grading, etc.*—The formation level of second track in the Park shall be the same at all points as that of existing one; the slopes of all cuttings and embankments are to be trimmed to the proportion of one and one-half horizontal to one vertical, excepting on the Burning Spring hill, where the slope

shall not be less than one and one-fourth horizontal to one vertical. The face of the slopes of all cuttings and embankments, excepting that of the Burning Spring, from the ties to the natural ground level, shall be sodded with newly-cut sods, cut in large strips and thoroughly pegged with long hardwood pegs. This sodding shall be done immediately after the slope shall have been put in good order and condition, and not later than the 1st July, 1894; and the grass on all such slopes must be kept by the Railway Company close cut at all times, to the full satisfaction of the Park Commissioners. The slope of the Burning Spring hill shall be sown with good grass seed and planted with thrifty foliage trees or evergreens.

"Five feet of the space between tracks shall be levelled off even with the top of ties and covered with sods, and maintained in a thoroughly lawn-like condition at all times.

"The side slope of cutting east of the Dufferin gate must not interfere with the driveway along the top of the bank at any point; but a minimum space of twenty-four (24) feet must be preserved intact at the nearest approach to the Park boundary of the top of the finished slope.

"Should the prescribed angle of slope, if carried from formation level, curtail this space, sufficient land must be secured and deeded to the Commissioners as shall at all times afford the full width of twenty-four (24) feet for driveway purposes.

"*Roads and Paths.*—Where the railway crosses the Park driveway on Dufferin Islands, the embankment must be widened out sufficiently so as to permit of a carriage turning completely around, clear of the rails, without danger to the occupants thereof.

"The footpaths crossing the railway on islands must be graded and gravelled to the satisfaction of the Park Commissioners. The portion of the driveway occupied by the second track, from the gardener's house to the gravel pit, to be compensated for by widening out the driveway on the landward side to the full width, clear of the ballast, of eighteen feet, and forming and macadamizing and rolling the surface thereof to a true and hard finish. The slopes of cutting made on the south side of driveway by this widening to be trimmed and sodded.

"*Driveway on Cedar Island.*—Where the driveway on Cedar Island is encroached upon similar compensation must be provided, and the space between the rails of the second track shall also be macadamized and rolled and made fit for driving over for such distance as may be decided on by the Park Commissioners. The roadway at north end of Cedar Island, when widened as above described, shall be carried over the original channel of river to the mainland by a suitable bridge structure, to be erected by the Railway Company to the satisfaction of the Commissioners. All driveways and pathway crossings now in existence, or which hereafter may be required by the Commissioners, must be planked the full width of the space occupied by the tracks, and of such lengths as may be approved by the Park Commissioners, and the crossings maintained in good order and condition at all times.

"*Gravel Pit.*—The gravel-pit track to be removed at once and the sides of pit sloped off neatly to an even pitch. A supply pipe of sufficient dimensions to maintain a full head of water, and not less than eight inches in diameter, to be laid from the river at the iron railway bridge at Clark Hill to the gravel pit, and an overflow of equal dimensions to be laid from the pit to the river adjoining; the bottom of pit to be graded evenly and the boulders either removed or made to form an island in the centre.

"*Dam at Channel Inlet.*—The dam placed at the channel inlet to Cedar Island to be removed and the inlet cleared of the debris. A proper outlet

shall also be provided by the railway at the north end of Cedar Island, so as to permit this branch of the river to flow on in its natural channel.

"*Permanent Way.*—The permanent way for the new track to be generally of a similar character to that of existing one: Ties to be eight feet in length, of sawn cedar, and placed two feet apart centres; stone ballast only to be used, and the width occupied by the ties in each of the two tracks over that portion or portions of the line which may be required by the commissioners to be covered with a top dressing of finely broken stone to a thickness of two inches above the ties and evenly spread, and the surface blinded with stone that shall pass through a half-inch ring. The space between the ends of the ties of the two tracks to be levelled and sodded.

"*Cattle Guard.*—A steel cattle guard to be put on new track at north limit of Park.

"*Ferry Crossing.*—Where the tracks cross the road leading to the 'Maid of the Mist' ferry, the road must be graded up to an even and satisfactory slope with finely broken macadam, and the tracks planked over even with rails to provide a crossing of twenty-four feet along the railway.

"*Surplus Grading.*—At any points where grading has been done or material placed in excess of the actual requirements of railway embankments, it must be removed and the original ground resodded and left in good condition.

"*Electrical Equipments.*—The iron poles will, in nearly all cases, have to be taken up and replaced in new positions. In replacing the poles, the concrete packing shall not be carried above level of centre of ties, good soil being spread evenly above to permit of sods being maintained around poles on an even level with balance of work. Where the poles are at present outside of the grading of the railway when finished, the excavations made therefor are to be well filled up and sodded over evenly with surface of adjoining ground.

"Iron poles are to be substituted for the wooden ones now carrying feeder wires at power station.

"*Paint Poles.*—All poles are to be painted afresh when properly in position and left truly plumb and complete in all respects. All guy or straining wires must be so placed as not to obstruct travel on roads or paths.

SECTION 3.

"*Double Tracking Opposite Town Front.*—In front of the town double tracks may be laid over the whole distance, excepting at the Clifton Suspension Bridge, where there shall be single track only, for a distance of two hundred and fifty feet south of the centre line of the bridge and fifteen feet north of the centre line of bridge, or a total distance of two hundred and sixty-five feet.

"*Location of Second Track.*—Commencing at the park boundary, the new track shall be placed on the river side of existing one until opposite the north end of the Clifton House, where it will become and continue single track to the bridge, as before mentioned, and as shown on plan No. 3. North of the bridge the second track will be laid on the landward side of the present one as far as Seneca street siding, where the two tracks will form part of the system, as shown on plan No. 4; the leads on either side being lengthened out to ease the curvature, and the space between the tracks being narrowed in.

"*Queen Street.*—Beyond the Seneca street siding the double track will continue on the landward side of existing track to opposite Queen street, where both tracks shall be deviated towards the river as indicated on plan No. 5. From this deviation the second track shall continue on the west side of the present track as

far as the Cantilever bridge, where the two tracks shall be located as shown on plan 'B.' From Bridge street station northwards for about a quarter of a mile the second track shall be placed on the river side of present one and from thence to north boundary of the town the new tracks shall be to the westwards, as shown on plan 'B.'

"*Width Between Tracks.*—From the park limits to the north boundary of the town the distance between the tracks shall not be more than eleven and one-half feet centre to centre, excepting at points where there are sharp curves, where the space between tracks may be made six inches wider.

"*Grading.*—The formation level throughout shall be the same as that of present track. The width to be graded covering the space between tracks and the space required for the new track.

"*New Roadway.*—In addition to this track space the Railway Company shall grade the roadway to the west of the new track for a width of eighteen feet from the line of ties and to a pitch of three inches from the level in the width of eighteen feet; the surface grading to be level with the base of ties where the roadway shall adjoin the track. This grading for roadway to be made the whole distance of two and two-tenths miles covered by this section of the line; all side slopes of cuttings or embankments to be trimmed true to line and level, and graded to 1 and ½ to 1.

"*Ballast.*—Ballasting of second track throughout to be of gravel or broken stone ballast, well packed around ties and even with the top of them. Space between tracks also to be ballasted up evenly therewith.

"*Finish of New Track.*—The space between the two tracks and the width occupied by new track to outside or westerly line of the ties must be macadamized up to and maintained even with the level of top of rails and rolled suitable for driveway purposes, where the driveway may be encroached upon.

"*Macadamized Roadway.*—In addition to the above works the Railway Company shall macadamize the roadway bed, when graded as aforesaid, to a width of sixteen feet from line of ties, and for a length of one-half the total distance covered by this section of the line, or say one and one-tenth miles from the Clifton House northwards. The macadam to be rolled and even with the top of the rail at the east side and sloping down to the west side of the roadway three inches from a level line, in order to drain the surface water therefrom.

"The above described work of grading for and macadamizing one-half of the length of the roadway for carriages, shall be begun and carried on with despatch and in such a manner as not to interfere with the ordinary travel over said road, and shall be completed not later than the first day of July, 1894, and shall be to the satisfaction of the Park Commissioners, and of the honorable the Commissioner of Public Works.

"*Sidewalk.*—Where it is necessary in the performance of these works to interfere with or change the sidewalk, the same shall be relaid in position satisfactory to the Commissioners and left in good order and condition.

"*Cross Drains.*—A sufficient number of cross drains must be put in to effectually carry off the surface water. Should the above-described works interfere in any way with the present side ditches on the road, full compensation must be made by providing new and satisfactory ditches, and where the space between the tracks and the present fences of adjoining properties is insufficient to permit of an open drain being laid down, a covered one of size and material satisfactory to the Park Commissioners must be put in and properly connected with the cross drains so as to preserve the present drainage.

"*Iron Railing of Fence to be Put in Good Condition.*—The iron railing along the edge of the cliff shall be put in good order and condition, and where it shall have been in any way interfered with it shall receive two good coats of oil and lead paint.

"*Location of Poles.*—Over this section of the railway, from the Clifton House to the railway suspension bridge, the poles carrying the wires shall be on the outside or cliff side of the tracks, and straining posts shall be placed opposite to these and on the west side of the roadway in such positions as may be pointed out on the ground by the Park Commissioners. The trolley wires shall be suspended over the two tracks from straining wires running from the main posts to straining posts. All the electrical work to be the best of its class and sufficient for the duty required of it.

SECTION 4.

"This section may be subdivided into two parts, viz., from the north limit of the town of Niagara Falls to the military reserve at Queenston Heights, and secondly, through the military reserve grounds at Queenston and including the village of Queenston.

"*Subsection 1.*—As to the first described section, or from the town of Niagara Falls to Queenston Heights, the following described works shall be done and performed by the railway company, viz.:

"*Location of Double Track.*—The double track throughout the section shall be, generally speaking, on the west of the existing line of rails, excepting through the lands purchased from Sir David Macpherson, where the new track may be placed on the east side of the present one if found desirable to lighten the work of excavation at that point.

"*Change of Location.*—With respect to the proposed change of location of the existing track and the building of the new one at Smeaton's gully, approval is withheld pending the submission of plans and specifications showing precisely the nature of the changes proposed, together with drawings of the bridges, piers, abutments, etc., as required under the agreement of December 4th, 1891, and the Act of Incorporation. The new track to be placed at a distance of eight feet from existing one, or say thirteen feet centre to centre.

"*Grading.*—The grading, ditching, etc., etc., throughout are to conform to the lines, levels and requirements of the present track. The space between the two tracks must be graded evenly with the sub-grade level of track, and all farm crossings or other work required be made complete in all respects. All cuttings and embankments are to have the slopes cleanly cut to a pitch of one and one-half horizontal to one vertical, and in all cases where material is borrowed for such embankment or wasted from such cuttings, the surface of the ground so interfered with shall be levelled off and left smooth and even, and, together with the slopes of all embankments or cuttings, be properly covered with good soil and sown with grass seed.

"*Cattle passes and culverts.*—Cattle passes and culverts are to be extended sufficiently to meet the requirements of the case.

"*Permanent way.*—The rails, fittings, guard rails, ties, ballasting, etc., etc., shall be equal in quality and quantity in each case to that of the existing track.

"*Electrical equipment.*—The centre-pole system will be adopted in this portion of the line, and the brackets, wiring, etc., shall be patterned after that presently in use

"*Subsection 2.*—Respecting the portion of the line located through the Military Reserve at Queenston Heights and in the Village of Queenston, approval to lay a double track is withheld pending the reception of a proper license of occupation from the Dominion Government to the Park Commissioners. When such license of occupation is received, permission to lay double track will be granted on the following conditions, viz., the location of the second line of rails to be as shown on plan A herewith. No trees that are not actually on the roadbed, or on the side slopes of graded embankments or cuttings shall be cut or maimed without the express sanction of the Commissioners.

"All slopes of cuttings or embankments are to be trimmed properly and sown with grass seed. The drive-way leading from the highway to Brock's Monument shall at the crossing be put in good condition for driving over; approaches to the tracks to be graded to an easy slope and well macadamized and rolled, and a wide plank crossing provided. Where pathway from the monument leads down the slope to the village, a suitable crossing over the tracks to be provided, including stairways on the graded slopes and a plank walk over tracks.

"All debris deposited upon the lands of the reserve by the Railway Company in excess of the works actually required for the purposes of the railway shall be removed and the grounds left in as good order and condition as originally found by the Railway Company.

"All the above described works shall be done and performed by the Railway Company to the entire satisfaction of the Honorable the Commissioner of Public Works and of the Park Commissioners, and with the exception of the several works for the performance of which approval is in the meantime withheld, all works above described and shown on plan or intended to be so described and shown shall be fully performed on or before the fifteenth day of June, 1894.

"Should any of the above described works be unfinished or be considered by the Park Commissioners to be not finished to their satisfaction on the above-mentioned date, the Park Commissioners reserve the right, on giving one week's notice in writing to that effect to the secretary and the manager of the Railway Company, to go on and carry out the several works to their satisfaction and to collect the cost of performing the said works from the Railway Company.

(Sgd.) JAMES WILSON,
Superintendent.

NIAGARA FALLS, 12th December, 1893.

"It is understood that nothing contained in this agreement or memorandum shall interfere or prejudice the Railway Company's rights as set forth in the original agreement and Act of Incorporation.

(Sgd.) J. W. LANGMUIR,
Chairman,
Queen Victoria Niagara Falls Park Commissioners.

(Sgd.) E. B. OSLER,
President,
Niagara Falls Park and River Railway Company.

TORONTO, 28th March, 1894.

"I, the Honorable Richard Harcourt, Acting Commissioner of Public Works for Ontario, do consent and approve of the within agreement and memorandum annexed thereto, subject to the sufficient quantity of land east of the Dufferin

Gate and top of the bank agreed to be deeded to the Commissioners for the purposes of affording full width for driving purposes, as stated in the fifth page of the memorandum, being duly conveyed and deeded to the said Commissioners within three days hereof; the sufficiency in quantity and area to be such as the Park Superintendent shall determine.

Witness my hand this 28th day of March, 1894.

(Sgd.) RICHARD HARCOURT,
Acting Commissioner of Public Works.

The doubling of the track in front of the town of Niagara Falls necessitated some changes in the location of the driveway along the Chain Reserve, which is vested in the Commissioners, and negotiations were entered into between the town authorities and the Commissioners with a view to having a better class of roadway provided and maintained. These negotiations resulted in an undertaking by the representatives of the town to pay the sum of one thousand dollars towards the cost of construction of the road and to pay one-half the outlay for maintenance thereafter. The greater part of the driveway has been graded even with the railway and macadamized, and when the town implements its undertaking the remainder of the work will be performed.

Early in the season efforts were made by the Railway Company to establish a steamboat service between the upper terminus of the railway at Chippawa, a village at the confluence of the Welland and Niagara rivers about two miles south of the Falls, and the city of Buffalo, some eighteen miles farther up the river, and arrangements were made to put on a first-class steamer. It was found that owing to the size of the steamer proposed for this work, great difficulty would be experienced in turning around in the narrow stream at the Chippawa terminus. It was also discovered that a wide-spread feeling prevailed that it would be more or less dangerous to approach so near to the rapid waters of the Niagara as the entrance to the Welland river necessitated. Application was therefore made to the Commissioners by the Railway Company for permission to extend the railway across the Welland river and southward upon the Chain Reserve to a point on the Niagara where navigation is considered to be perfectly safe. The Commissioners sought and obtained the sanction of the Legislature to act in the premises, and on the 7th May, 1894, entered into an agreement with the Railway Company by which authority was granted them to extend the line for about two miles to a point locally known as Slater's Point, and the line was constructed in time for the opening of tourist navigation. As the Railway Company claimed the project was entirely in the nature of a venture which might have to be abandoned for lack of support in a year or two, provision was made in the agreement for a temporary construction, to be replaced, should the line be permanently established, by a construction equal to that of the then existing railway.

The text of the agreement is as follows:

"This agreement made in quadruplicate the seventh day of May, one thousand eight hundred and ninety-four, between the Commissioners for the Queen Victoria Niagara Falls Park, hereinafter called 'The Commissioners,' of the first part, and the Niagara Falls Park and River Railway Company, hereinafter called 'The Railway Company,' of the second part.

"This agreement may be known as the Chippawa Extension Agreement.

"Whereas the Act of the Legislature of Ontario incorporating the Niagara Falls Park and River Railway Company (55 Victoria, Chap. 96) empowered the Railway Company to construct and operate extensions of their electric railway from Chippawa to Fort Erie and from Queenston to the Town of Niagara, as may be determined;

"And whereas in respect of the extension of the electric railway from Chippawa, the Legislature of Ontario, by an Act passed at the recent session respecting the Queen Victoria Niagara Falls Park, enacted that 'The Commissioners and the Niagara Falls Park and River Railway Company may enter into an agreement to extend the existing electric railway from Chippawa along the bank of the River Niagara southerly to a point on the said river not exceeding two miles from Chippawa,' and it was by the said Act further provided that 'such agreement shall provide for the location and mode of construction of the said railway, and may include matters similar to such as are contained in the agreement of 4th December, 1891, between said parties, and in the Act passed in the 55th year of Her Majesty's reign, Chapter 96, validating said agreement, and may be on such terms and conditions as the Commissioners and the Railway Company agree on,' and that 'such agreement shall have no force or effect without the approval of the Lieutenant-Governor in Council, and on such approval the Railway Company may exercise in respect of such extension the powers exerciseable by the said Railway Company in respect of the construction and operation of the Electric Railway between Queenston and Chippawa, under the said Act, 55 Victoria, Chapter 96, and in accordance with the limitations therein contained, so far as the same may be consistent with the agreement aforesaid.'

"And whereas in pursuance of such powers, the Commissioners, subject to the approval of the Lieutenant-Governor in Council and the Railway Company, have defined the terminus of the said extension railway at a point about one and a half miles to the south of Chippawa on the Niagara river, and the said parties have, in pursuance of the powers conferred by the said Act of the recent session agreed, subject to the approval of the Lieutenant-Governor in Council, as aforesaid, in manner following:

"Now therefore these presents witness, that is to say:

"1. The location of the extension line to be from that point of the existing railway opposite to the public bridge, thence over the said public bridge over Chippawa creek (or Welland river), and thence easterly along the highway on the south side of the Chippawa creek until such highway joins the reserve in front of the lots bordering on the Niagara river and generally described as the Chain Reserve and thence along the westerly side of the Chain Reserve to the before mentioned terminus on the Niagara river.

"2. Such location through the village of Chippawa and over said public bridge to be in accordance with the by-laws or resolutions of the municipal council of the village of Chippawa or other proper authority, and also of such regulations as the Governor in Council has made, or may from time to time make, in respect of crossing the said Chippawa creek by the said public bridge or otherwise.

"3. The railway to be built between the point on the existing railway opposite the bridge at Chippawa and the terminus on the bank of the Niagara is to be a double track, except over the bridge at Chippawa, and between certain points hereinafter provided, where a single line only as hereinafter provided may be deemed sufficient. The eastern track of the railway to be on the western side of the Chain Reserve, and to the west thereof shall be laid the western railway

track, and on land still further to the west, but immediately adjoining, a road shall be formed to be used as a public highway. Such works and matters by the Railway Company to be done and provided shall be as specified more particularly as follow :

"A. The Railway Company shall, without unnecessary delay, vest in the Commissioners, for public purposes, so much of the lands lying to the west of the Chain Reserve along the bank of the Niagara river and south of the village of Chippawa as may be contained by a line drawn parallel with the westerly line of the reserve as presently defined upon the ground and distant sixty feet therefrom, and extending from the mouth of the Chippawa river southwards for a distance of about one and a half miles, or to such point as will be the terminus of the proposed railway, within two miles from Chippawa. Where arbitration proceedings are taken the title to be vested in the Commissioners, to be one month after the final award in such matters.

"B. The Railway Company shall form a roadway on the lands above described, with properly graded and crowned roadbed of not less than twenty-four feet in width, and provided with substantial side ditches and cross drains of a capacity sufficient to carry off the water at all seasons of the year. The Railway Company shall fence the westerly limit of the new roadway with a substantial post and wire fence. No other fences shall be erected.

"C. The Railway Company may put down upon the present Chain Reserve a single track railway from the village of Chippawa southwards for a distance not to exceed two miles, and as indicated on the plan 'A' herewith, the course of said track to follow the general line of the fence bounding the Chain Reserve on the west as closely as safety will permit. In addition to the single track thus defined, one or more sidings will be permitted at or near the site of the proposed steamer landing, in the locations and of such lengths as may be approved of by the Commissioners. Until the completion of the works described in paragraph 'B' to the satisfaction of the Commissioners, the travelled way upon the reserve shall be preserved. Where the space is too narrow to admit of the track clear of the roadway, the space occupied by the track shall be planked over and made safe for the passage of vehicles, to the approval of the Commissioners.

"D. When the Railway Company shall have acquired and vested in the Commissioners the lands above described, and shall have formed the roadbed and provided the ditches and watercourses in a manner satisfactory to the Commissioners, the Commissioners authorize the laying of a double track parallel with and co-terminus with the line of railway provided in paragraph 'C,' and at the usual distance therefrom.

"E. The Railway Company shall not occupy any of the lands east of the railway tracks, excepting for sidings near the steamer landing as before provided. Where the erosive action of the river may necessitate the building of crib work or other desirable form of protection from time to time, the same shall not be carried above the level of the tracks of the railway. The right to build such crib work or other protection, at exposed points, shall not be construed as affording the Railway Company any rights in the lands so used.

"F. The Commissioners, so far as they can, shall license to the Railway Company the occupation of a water lot at the proposed site of steamer landing, but not exceeding two hundred and fifty feet along the river, for the erection of a wharf, but such wharf shall not project out into the river a greater distance than one hundred feet at any point, or such distance as may be necessary to reach deep water.

"G. Should the Commissioners desire at any time hereafter to open roadways or other crossings over the tracks of the Railway Company to afford access to the water or water lots, the Railway Company shall provide proper facilities for crossing the tracks.

"H. The character and finish of the works to be done under this agreement shall be subject to the approval, from time to time, of the Commissioners.

"J. If in the opinion of the Commissioners, there is sufficient space on the Chain Reserve, opposite to the lands formerly the property of Dr. Macklem, and within the village of Chippawa, to admit of a single line of railway without unduly encroaching upon the travelled highway, the Railway Company shall not be required to provide the full width of sixty feet to the west of the Chain Reserve over and across this property (a distance of 300 feet, more or less) as provided for in paragraph 'A' of this agreement, but may leave the same in abeyance until a double track is required. The single track in front of this property shall be located to the approval of the Commissioners.

"K. The Railway Company shall, without unnecessary delay, build the new road on the west side of the railway, and until the same has been completed will give the accommodation necessary for public traffic on the existing roadway, and will protect the Commissioners or any others interested against any claims by reason of the occupation of the highway.

"5. And for the due execution and performance of the said works the Railway Company may exercise all the powers which are vested in the Railway Company to be exercised under The Railway Act of Ontario, under the agreement of 4th December, 1891, and by the Act 55 Vict. chap. 96, validating the same.

"6. And it is further witnessed and agreed that the Railway Company shall operate the extension henceforth, and in the event of the Railway Company omitting to operate the same between the months of May and November in any year, the Railway Company, upon notice in writing by the Commissioners to the Railway Company, shall, within three months after such notice shall have been given, remove their rails and superstructure from off the extension, and all right and interest of the Railway Company therein shall thenceforth cease, except that the Commissioners will be liable to pay the Railway Company one-half the actual cost of the strip of sixty feet acquired by the Railway Company for the purposes and requirements of section 'A' of the fourth paragraph of this agreement, such actual cost being the sum paid by the proprietors for the acquisition of such land by contract or arbitration, as the case may be, and of which actual cost the Railway Company shall furnish the Commissioners with the amount and particulars of payment within six months from the date thereof, and in the event of arbitration proceedings, if any, not then terminated then within one month of the termination of such arbitration proceedings.

"7. And it is further agreed that at any time after three years and within four years from the date thereof, the Railway Company continuing to operate the said railway, the Commissioners shall have the option to determine that the extension, including the dock and terminus thereof, shall form part of the existing system of railway of the Railway Company between Queenston and Chippawa.

"8. The said option shall be signified in writing under the corporate seal of the Commissioners as given in pursuance of this agreement, and thereupon and within three months thereafter the Railway Company shall make such extension railway in all matters as to materials, work and plant to conform, and be equal in respect of construction, permanent character of works, in accordance with the

provisions and specifications of the railway between Queenston and Chippawa, as agreed to be built under the agreement made between the Railway Company and the Commissioners on the 27th day of March, 1894, and as to the terminal point on the Niagara river in accordance with the 9th section of the agreement of the 4th of December, 1891, which said works shall be subject to the same requirements and approval of the Commissioners and the Commissioner of Public Works for Ontario as in the said agreement and by the Act, 55 Victoria, chapter 96, are provided.

"9. And in the event of the said option being exercised by the Commissioners, such extension shall form part of the railway system between Queenston and Chippawa, and shall thenceforth be subject to the same terms and conditions of tenure terminating at same periods, and subject to the same rights of compensation and modes of ascertainment thereof, and of rights of the Commissioners as between the Railway Company and the Commissioners, as specified and contained in the agreement of 4th December, 1891, and in the Act passed in the 55th year of Her Majesty's reign, chaptered 96, validating said agreement.

"10. To prevent misapprehension and ambiguity, it is hereby declared and understood that until the said option in the foregoing seventh paragraph of this agreement is exercised by the Commissioners, the Railway Company shall not be required to convert the said extension into a work up to the standard of their said existing railway.

"In witness whereof, the corporate seal of the Commissioners has been hereunto affixed by their chairman, who has also signed the same, and the corporate seal of the Railway Company has also been hereunto affixed, and the president and secretary of the Railway Company have affixed their signatures, the day and year first above written."

Signed, sealed and delivered by the chairman of the Commissioners, in the presence of

(Sgd.) JAMES WILSON,

and by the Railway Company in the presence of

(Sgd.) G. T. CHISHOLM.

(Sgd.) J. W. LANGMUIR, Chairman,

The Niagara Falls Park and River Railway Company.

(Sgd.) E. B. OSLER, President.

(Sgd.) R. A. SMITH, Secretary.

Acting under the authority obtained at the last session of the Legislature (57 Vict., Cap. 13), and with the approval of the Government, agreements were entered into with the Clifton Suspension Bridge Company (Carriage) and the Niagara Falls (Railway) Suspension Bridge Company, in respect to the occupancy of portions of the Chain Reserve and talus by their structures. In each case it is proposed to erect new and more substantial bridges to accommodate the increasing traffic, and facilities were desired in order to accomplish this end. In

both instances the Commissioners exacted compensation for the present occupation of a portion of the Chain Reserve by the bridge piers by securing lands to the west of the Chain Reserve sufficient to widen out the driveway at these points. In these agreements the Commissioners also reserved a right of way for the projected low-level railway in the gorge near to the water's edge, and otherwise provided for the future interests of the Park.

These agreements are as follows:

"Agreement between the Commissioners of the Queen Victoria Niagara Falls Park and the Clifton Suspension Bridge Company.

"As per Schedule to Bill No. 41, 'An Act to amend the Acts respecting the Clifton Suspension Bridge Co., 1894'".

SCHEDULE.

"Memorandum of agreement made this 11th day of April, A.D. 1894, between the Commissioners of the Queen Victoria Niagara Falls Park (hereinafter called the Commissioners) of the first part, and the Clifton Suspension Bridge Company (hereinafter called the Bridge Company) of the second part;

"Whereas the Bridge Company are the proprietors of a suspension bridge across the Niagara river below the falls;

"And whereas the said Bridge Company have by their petition applied to the Parliament of Canada at its present session for an Act empowering them, amongst other things, to construct another bridge across the said Niagara river north of the present structure, together with the right of operating railway cars across the same;

"And whereas the said Bridge Company are by virtue of a grant from the Crown, dated the twenty-eighth day of January, 1873, the proprietors of a strip of land two hundred feet in width along the Niagara river, and otherwise more particularly described in the said grant and the plan therein referred to and subject to the exceptions therein contained upon part of which the present structure of the Bridge Company is situate;

"And whereas by certain Acts of the Legislature of Ontario, the Commissioners have vested in them that part of the highway which is excepted from the operation of the grant to the Bridge Company hereinbefore referred to;

"And whereas it may be necessary for the construction of a new bridge and the operation of electric or other cars over the same, moved by any power except steam, that the Bridge Company should have the right to cross the said highway or otherwise encroach or interfere with the same, and subject to arrangement with the Niagara Falls Park and River Railway Company to cross or otherwise interfere with its tracks:

"And whereas the Commissioners contemplate the construction at some future time of a low level railway line underneath the bridges of the Bridge Company near the water's edge of the Niagara river, and for that purpose desire to have the piers of the Bridge Company so constructed as not to interfere with the construction or operation of the said railway;

"And whereas the said parties have agreed to make the mutual concessions which each desires from the other;

"1. Now, therefore, this agreement witnesseth that in consideration of the premises and of the mutual covenants and agreements between the parties, the Bridge Company hereby grant unto the said Commissioners the absolute and

irrevocable right to construct, maintain and operate below the bridges of the Bridge Company and across the property hereinbefore referred to, granted by the Crown to the Bridge Company, a double track line of railway.

"2. It is agreed on the part of the Bridge Company that any piers or abutments or other portions or appliances of any bridge built by the Bridge Company shall be so located as to admit of the said low level railway as a double line, and on the part of the Commissioners it is agreed that they shall not injure, prejudice or interfere with any such piers, abutments, or appliances in the construction or operation of the said low level railway.

"3. The Commissioners hereby covenant and agree with the Bridge Company that the Bridge Company shall have the right to erect their bridge structure and operate their cars over the said bridge and across the highway upon and opposite to the lands vested in the Bridge Company as hereinbefore mentioned, and subject to arrangement with the Niagara Falls Park and River Railway Company, and to such order as the Railway Committee of the Privy Council may make to cross the tracks of the said Railway Company.

"4. In the event of the Bridge Company deciding to build upon the cantilever principle, they shall be at liberty to place such portion of their said structure as may be necessary under the said highway in front of the lands aforesaid, provided always that they shall not interfere with the using of the same by the public or the said Niagara Falls Park and River Railway Company.

"5. And in the event of the Bridge Company deciding to build a double deck bridge on the lands aforesaid, it shall be competent for them to cross the said highway with an arch or truss, subject to approval of the plans of the said crossing by the Commissioners and by the Railway Committee of the Privy Council.

"6. It is agreed that in the event of such a structure being decided upon for the new bridge as will require guys for its maintenance, that the same may be placed or affixed to portions of the bank belonging to or under the control of the Commissioners, and also that the guys to the present structure shall not be interfered with, and also that it shall not be necessary for the Bridge Company to change or alter the location of the towers of the present bridge. Provided always that the said guys must be so arranged as not to interfere with the said low level railway, and that the Bridge Company will from time to time, at the request of the said Commissioners, so change the location of the said guys outside the lands of the Bridge Company to such point or structure as the Commissioners may desire, but no such change shall be directed as shall endanger the safety of the said bridges.

"7. It is also agreed that the cables used by the Bridge Company in its present bridge shall not be interfered with, and they shall also be at liberty to stretch across the said highway any cables which it may be necessary for them to use in connection with the new structure or in substitution of any cables at present in use or hereafter to be used in connection with the said bridge, or either of them.

"8. The Bridge Company shall grant and quit-claim to the Commissioners all the right, title and interest of the said Bridge Company of, in and to so much of their lands on the west side of the Chain Reserve as may be contained by a line running from the present southeast corner of the verandah of the Cliff House to a point situate twelve feet to the west of the front line of Hawley's Museum for the purpose of dedicating the same to the public as a portion of the adjoining highway.

"9. The covenants and agreements herein contained shall be binding upon the said Commissioners and their successors, and upon the said Bridge Company, their successors and assigns.

"10. The Bridge Company shall not exercise any powers vested in such company in relation to the lands and property vested in the Commissioners, nor shall the Bridge Company have any rights in relation to the same other than such as are in this agreement contained, or as may hereafter be agreed upon between the Commissioners and the said Bridge Company.

"11. It is agreed that in the event of the Bridge Company failing to get an Act from the Parliament of Canada at the present or next session thereof for the purposes hereinbefore referred to and constructing a bridge thereunder, this agreement and all the covenants and agreements therein contained shall be absolutely null and void, but upon the passage of such Act of Parliament this agreement shall take effect and be binding upon the parties thereto from the time of the passing of such Act.

"In witness whereof the said parties have hereunto set their hands and seals.

Signed, sealed and delivered in the presence of

(Sgd) JOHN S. READ, Teller.

JOHN W. LANGMUIR, Chairman.

[Corporate seal of the Commissioners of the Queen Victoria Niagara Falls Park.]

CHARLES H. SMYTH, President.

[Corporate Seal of the Clifton Suspension Bridge Company.]

"Memorandum of agreement made this third day of May, A.D. 1894, between the Commissioners of the Queen Victoria Niagara Falls Park, hereinafter called the Commissioners of the first part; the Niagara Falls Suspension Bridge Company, hereinafter called the Bridge Company of the second part; and the Niagara Falls Park and River Railway Company of the third part.

"Whereas the Bridge Company are proprietors of the Railway Suspension Bridge crossing the Niagara river below the falls;

"And whereas the said Bridge Company have by their petition applied to the Parliament of Canada at its present session for an Act empowering them, amongst other things, to construct another bridge across the Niagara river, together with the right of operating railway cars, electric or cable, or other railway across the same;

"And whereas by certain Acts of the Legislature of Ontario, the Commissioners have vested in them certain lands herebefore vested in the Crown;

"And whereas it is desirable in the interest of the Park that certain lands, the property of the Bridge Company, should be vested in the Commissioners;

"And whereas it is desirable that certain other lands, now vested in the Commissioners, should be granted by irrevocable and perpetual license by the

Commissioners to the Bridge Company for the purpose of the undertaking of the Bridge Company;

"And whereas the parties hereto have agreed to make the mutual concessions which each desires from the other;

"1. Now, therefore, this agreement witnesseth, that in consideration of the premises, and of the mutual covenants and agreement between the parties, the Commissioners hereby grant and confirm the title in fee to the Bridge Company of the lands on the Chain Reserve now occupied by the bridge structure and offices and bridge supports of the Bridge Company. And the said Commissioners do also hereby grant to the Bridge Company irrevocable and perpetual license the exclusive occupation of a piece of land seventy feet in width on the north side, and a piece of land seventy feet in width on the south side of the lands, the title to which has been confirmed by the conveyance of the Commissioners hereinbefore referred to.

"And also down the talus or slope of the bank to within eighty feet of ordinary high water mark of the Niagara river, measured down the slope, or sixty-six feet measured horizontally from the said high water mark.

"The plan signed by the parties hereto and filed with this agreement in the department of the Secretary of State for Canada, shows the land, the title to which is confirmed by the Commissioners, which said parcel of land is tinted pink on the plan, and the said parcel of land as to which the said Commissioners have granted an irrevocable and perpetual license is shown upon the said plan tinted green.

"2. The Bridge Company hereby grant and convey to the Commissioners for the purposes of a public road or highway, all the lands shown on the said plan as colored yellow, and lying between the westerly limit of the chain reserve and a line drawn from the northerly boundary of the Bridge Company's property parallel with the stone abutment of the Bridge Company, and distant easterly twenty feet therefrom, and inclining from the point opposite the southerly corner of the abutment to a point on Bridge street in line with the said abutment. And in addition the Bridge Company hereby grant and convey whatever right the Bridge Company have in and to the parcel of land formerly owned by John A. Orchard, and conveyed by him to the said company, and forming part of the highway to the north of the lands colored yellow on said plan.

"3. And it is agreed between the parties hereto that these presents, or any covenants by any party hereto, hereinafter contained, are not to be construed as expressing or implying any covenants for title or quiet possession.

"4. The Commissioners covenant with the Bridge Company that the said lands hereby granted by the Bridge Company to the Commissioners, are to be used for the purpose of a public street, and the said Bridge Company are to have the free use thereof for access to and from the bridge as at present constructed on the level and overhead, or for any bridge that may be hereafter constructed for themselves; and, also, to and from the bridge at present constructed, or any bridge that may be hereafter constructed, to the lands owned by the said Bridge Company to the west of the said piece of land colored yellow. And the Commissioners also covenant with the said Bridge Company that the said lands shall be used as a public road for the free use of all persons travelling thereon, either in carriages or on foot or otherwise.

"5. The said Commissioners covenant that the said Bridge Company shall have the right of crossing the said road or highway and the said lands above described, marked yellow, and also the said lands hereby granted and conveyed to the

Commissioners with a single or double track, electric or cable or other railway, to be moved by any power except steam, to reach the lands of the Bridge Company to the west thereof, and are to have the right to cross on the level the tracks of the Niagara Falls Park and River Railway in such manner and upon such terms as may be agreed upon between the said Bridge Company and the said Niagara Falls Park and River Railway, and subject to the directions which may be approved by the Railway Committee of the Privy Council; and in the event of the Bridge Company failing to make an arrangement with the Niagara Falls Park and River Railway for such crossing, the Bridge Company are to have the right to cross the tracks of the Niagara Falls Park and River Railway in such manner and according to such directions and upon such terms as the Railway Committee of the Privy Council may approve.

"6. It is agreed between the parties hereto, that the Niagara Falls Park and River Railway Company shall have the right to lay a double track, and no more, for their electric railway upon the said highway, it being agreed, however, that the said Niagara Falls Park and River Railway Company shall not place their rails nearer to the present entrance of the Bridge Company than at present, and that any second track which may be placed by the said Niagara Falls Park and River Railway Company shall be laid on the westerly side of the existing track.

"7. It is also hereby agreed between the Commissioners and the Bridge Company, that in the event of the Bridge Company desiring for the purposes of their present structure or for the construction of a new bridge, to alter their piers or abutments as at present placed, the said Bridge Company are to be at liberty to do so, and it is hereby agreed between the parties hereto that the grant of the said lands, marked yellow, and of the other lands by the Bridge Company to the Commissioners, are subject to the right of the Bridge Company to retain their piers or abutments as at present located, and with the privilege to the Bridge Company to alter or change the size of their piers and their location to any other point upon the said parcel of land marked yellow and the other parcel of land hereby granted by the Bridge Company to the Commissioners, subject, however, to allowing free access over the said lands for a public street for all proper purposes, and, also, so as not to interfere with the tracks of the Niagara Falls Park and River Railway as located on the said street.

"8. It is hereby agreed between the parties hereto, that the Bridge Company shall have the right upon the lands granted and licensed to them and marked respectively upon the said plan pink and green, to place any erections or structures that may be necessary for the renewing of their present structure or for the construction of a new bridge on the cantilever or single arch principle or otherwise, and for the necessary offices in connection with the same, the Bridge Company agreeing with the Commissioners, that if, after the construction of the said new work, any portion of the lands colored pink or green upon the said map, may not be necessary in connection with such structure, that such portion of such lands as may be on the bank shall be maintained by the said Bridge Company as an ornamental plot or flower garden.

"9. It is agreed that in the event of such a structure being decided upon for a new bridge as will require guys for its maintenance, that the same may be placed or affixed to portions of the bank belonging to or under the control of the Commissioners; and, also, that the guys to the present structure shall not be interfered with, provided always that the said guys must be so arranged as not to interfere with any low level railway that may be sanctioned by the Commissioners, and that the Bridge Company will from time to time, at the request of

the said Commissioners, so change the location of the said guys outside the lands of the said Bridge Company to such point or structure as the Commissioners may desire, but no change shall be directed as shall endanger the safety of the bridge.

"10. It is agreed that the Bridge Company shall not exercise any powers vested or to be vested by the said Act in such company, in relation to the lands and property vested in the Commissioners, or have any rights in relation to the same other than such as are in this agreement contained, specified and described, or unless as may hereafter be agreed upon between the Commissioners and the Bridge Company.

"And the parties hereto of the third part hereby consent to and approve of the foregoing agreements.

"In witness whereof the parties hereto have hereunto set their corporate seals."

Signed, sealed and delivered in the presence of

(Sgd) R. G. COX.

(Sgd.) J. W. LANGMUIR,
Chairman Q. V. N. F. Park Commissioners.

(Sgd.) THOS. R. MERRITT,
President
Niagara Falls Suspension Bridge Co.

(Sgd.) EDWARD B. OSLER,
President
Niagara Falls Park and River Railway Co.

Under the authority of the Act of the Legislature before referred to (57 Vict. chap. 13) the foreshores of the river lying in front of the Park proper, and extending from the highwater mark out to the international boundary line, were vested in the Commissioners by Order in Council of date 6th July, 1894.

Several important and necessary additions to the Park domain were effected during the year. A large part of the territory lying under the high bank of the river, one mile below the whirlpool, and known as "Foster's Flats" had been disposed of by the Crown prior to Confederation. As it was considered desirable for many reasons to extinguish the private rights to these lands, they were acquired by arbitration proceedings; and the title of the Commissioners to all the lands forming the talus, and extending from the Falls northwards to the Military reserve at Queenston, is now complete, with the exception of a very small piece immediately south of the reserve, the title to which was in Sir David Macpherson and is now under the control of the Electric Railway Company. The Commissioners, however, have a chain in width from the water's edge in front of this portion, so that its acquisition is not a matter of very great moment.

The property thus secured, fifty-five and a half acres in all, lying as it does along the shore of the river for about three-eighths of a mile and immediately in front of the wildest portion of the lower rapids, is a very desirable addition to the Park; and in view of the ultimate construction of the low-level railway it will be of great value for a picnic ground and place of public resort. It has long been celebrated for its exceptional wealth of plant life, and to the student of geology its location and structure are of special interest.

The Commissioners have also completed the acquisition of "Wintergreen Point," a bold promontory in the rocky wall of the gorge immediately overlooking "Foster's Flats." This piece of three and a half acres was cut off from the adjoining property by the line of the Electric Railway and enclosed by it and the Chain Reserve along the top of the bank. When cleared up and put in order it will prove a delightful prospect point from which to survey the surrounding scenery and mark the devious course of the great river.

In order to straighten the driveway in front of a portion of the town, it was found desirable to acquire a narrow strip on the west side of the Chain Reserve. This affords a proper width at a point where physical obstacles necessitated the construction of the electrical railway farther from the edge of the cliff than at other places and saves a double crossing of the tracks by traffic vehicles.

Authority having been obtained at the last session of the Legislature, an additional issue of debentures to the extent of $75,000 was made during the year. The new issue was made subject to the $525,000 issued in 1887, matures at the same time, viz., 1927, and bears the same rate of interest, that is, four per cent. The price obtained was $102\frac{57}{100}$, as compared with $101\frac{84}{100}$ obtained in 1887. The proceeds enabled the Commissioners to wipe out the balance due to the Imperial Bank, pay for the lands acquired, make some urgently needed improvements to the property, provide for the debenture interest, carry on the usual works of maintenance and close the year with a balance to the good.

As was noted in last year's report the rental payable by the Canadian Niagara Power Company under the terms of their agreement of 7th April, 1892, will begin this year. The $25,000 to be received from this source, together with the other fixed revenues, will amply provide for all the ordinary expenditure in connection with the Park and leave a reasonable sum available for permanent improvement to the property.

Application having been made by the Niagara Falls Park and River Railway Company for permission to erect an incline north of the Maid-of-the-Mist Ferry Landing, in accordance with the terms of the agreement of 4th December, 1891, very careful examination was made of the ground by the Commissioners in order to secure a site for the incline and the buildings in connection therewith which would not interfere with the views from the approaches to the Park to a greater degree than was absolutely necessary. A site for the building at the top was finally determined on, which fills the precise field of view previously occupied by a mixed clump of scraggy red cedars and sumacs. The design and finish of the building, as erected, are most artistic and ornate; and the construction of the incline is of the most substantial and complete description. The motive power used is electricity.

Plans showing the general design of the works proposed to be undertaken in the Park by the Canadian Niagara Power Company were submitted for the approval of the Commissioners, as required by the terms of their agreement of April 7th, 1892. In view of the magnitude of the interests involved the Government, at the request of the Chairman, appointed Sir Casimir Gzowski, K. C.M.G., a special commissioner to assist the Commissioners in passing upon the plans of the projected works, and more particularly with respect to the engineering features of the plans submitted. After a full consideration of the three several and distinct systems of development submitted by the Power Company, approval was given with the consent of the Government, to one of the systems proposed, which would conserve the scenic features of the Park to the fullest extent and put the bulk of the works underground. A modified approval was also given to one of the alternative systems which, it was claimed, was specially

designed to obviate some of the most serious difficulties apprehended from running ice and frazil in the winter season. In this latter system nearly the whole of the works would be underground. The officials of the Company anticipate an early commencement of the work.

Early in the season it was found that substantial protection works along the main shore of the river behind the Dufferin Islands were absolutely necessary in order to save the beautifully wooded banks from being irreparably injured by the erosive action of the river, and a considerable expenditure was incurred in this work. About 800 feet in length out of a total of 2,050 feet has been constructed and the balance will require to be taken in hand early this year. This work will, when completed, form a nicely shaded promenade around the whole reach of the river from Clark Hill to the Dufferin Gate, and add very much to the attractiveness of this portion of the Park.

The picnic grounds were greatly improved and enlarged early in the spring, and a large rustic pavilion was erected with a very comprehensive system of hot and cold water supply devised in connection with it for the convenience of the excursion travel. The number of excursionists visiting the Park has been greatly increased by the conveniences afforded by the Electric Railway, and the opening of the River Line to Buffalo will doubtless greatly augment the numbers when the attractions of the route become better known. A neat and commodious rustic shelter has been built at Inspiration Point, and this very delightful vantage ground from which to view the panorama of the Falls is now well equipped for the use of the public. A number of other improvements in the Park domain were undertaken which will be found more particularly described in the report of the Superintendent appended hereto.

The receipts and expenditures for the year ending December 31st, 1894, are herewith submitted, the details of which will be found in the tabulated statement attached to the Superintendent's report.

RECEIPTS.

From rentals of photo, elevator and refreshment privileges	$ 8,200 00
Niagara Falls Park and River Railway	10,000 00
Island tolls on carriages	1,483 75
Sundry sales, etc., etc	349 94
Imperial Bank, interest on deposits	412 89
Net proceeds of sale of debentures	77,285 93
	$97,732 51

EXPENDITURES.

Permanent works on Capital Account:		
Paid Imperial Bank, amount of overdraft, December, 1893		$35,721 90
Cribwork, protection and other works of permanent improvement in the Park	$7,002 66	
On account of metalling, etc., the river driveway in front of the town	3,445 70	
For lands acquired at Foster's Flats, etc.	6,244 63	
Legal and arbitration expenses	1,313 90	
Sundry small items	234 00	
		18,240 89

EXPENDITURES.—*Continued.*

Maintenance charges:		
Salaries and wages, including wages of laborers	$10,791 20	
Materials, etc	1,595 57	
Office expenses	257 55	
Commissioners' travelling expenses	296 54	
Miscellaneous	331 71	
		13,272 57
Coupon interest on debentures and charges		22,565 46
Interest on bank overdraft		1,468 25
Balance on deposit Imperial Bank, December 31st, 1894		6,463 44
		$97,732 51

All of which is respectfully submitted.

J. H. LANGMUIR,
Chairman.
JOHN A. ORCHARD.
GEORGE H. WILKES.

QUEEN VICTORIA NIAGARA FALLS PARK.

Annual Report of the Superintendent for the Year 1894.

To the Commissioners of the Queen Victoria Niagara Falls Park:

Gentlemen,—I beg to submit my report for the year ending 31st December, 1894.

The winter of 1893-4 was a comparatively mild one in the Niagara peninsula, and consequently we were not troubled as much as usual with ice or frozen spray in those portions of the Park exposed to damage from this cause. An ice bridge formed in the gorge on the 11th February and remained firm for over six weeks, finally breaking away on the 7th April. The beautiful and fantastically disposed tasselled draperies of frozen spray, referred to in last year's report, were again developed in wonderful profusion on the face of the cliff near Table Rock and proved very attractive to visitors.

Skating Rinks.—Efforts were made to afford as much enjoyment as possible to winter visitors, and the ice which formed on the ponds near the principle entrance to the Park was kept clear of snow and in good condition for skating. The opportunity thus afforded for the enjoyment of this exhilarating exercise in the open air, which cannot be secured elsewhere with safety in the immediate vicinity of the Falls, was eagerly embraced by large numbers of citizens from the town, village and adjacent rural districts, and, also, by many persons from the American side. This is the most conveniently located of the available water spaces in the Park for skating purposes; but as the water supply to the ponds is wholly from springs it does not freeze as quickly nor keep firm and safe as long as river water. An attempt was made to form a rink on the reach of smooth water behind Cedar Island, but owing to the prevalence of spray at this locality it is very difficult to maintain a proper surface on the ice for any length of time. The lower ponds, however, are spacious, well protected by the high wooded bluff on the west, and are under the supervision of the Constable in charge of the "Mowat Gate," and will answer for the present. When the works necessary to convert the gravel pit into an ornamental lake are completed, a large rink may be there formed, but it will not be as convenient of access to the general public.

Improved Facilities for Visitors.—The early spring enabled out-door work to be begun betimes in the Park, and the grounds were brought into good shape and maintained in that condition throughout the season. The greatly augmented excursion travel of 1893, resulting from the opening up of the Electric Railway and the consequent facility with which large masses of people reach the Park from Toronto and other large centres, demonstrated the necessity for greatly increased provision being made for their accommodation. After carefully studying the question it was determined to enlarge the picnic grounds by changing the roadway leading into the Park from the western entrance on Murray Street, and by swinging it around to the north in a bold sweep, add the old roadbed and a large piece of meadow land beyond it to the area already set apart for this purpose. This land was therefore drained, graded and sown quite early in the season; and a number of large foliage trees transplanted from elsewhere in order to afford shade, and the whole made ready for the rush of excursionists in July. The old dwelling house which stood on the south side of the original line of road was torn down and a lofty pavilion of cedar work and elm bark erected upon its

foundations, and gravel paths constructed, which lead to it from various directions. As this is a convenient point and near enough to answer as a centre for the picnic grounds, the lower part was arranged to contain the hot water apparatus. Many of the excursions coming to the Park are composed of several Sunday Schools and their friends. Others are large manufacturing or mercantile aggregations of employees. These usually supply their own provisions, and desire only facilities for making tea and coffee without expense. As some of these combinations number from ten to eleven thousand, it is apparent that a stove and tea kettle are not sufficient to meet their requirements, especially as they all usually want to enjoy refreshments immediately on arrival. A series of three upright boilers of 120 gallons capacity was, therefore, installed and connected by suitable piping to heating coils fixed in a large sized wood range capable of burning the limbs of trees and refuse timber of any kind. From these boilers supply is had to taps conveniently placed for access by which an abundant supply of hot water, at the boiling point, is furnished *free* to all. Cold water is also supplied *ad libitum*, both from the river and from springs. The apparatus for boiling the water is concealed underneath the floor of the pavilion and is in charge of a competent official. The closet conveniences which had been provided in connection with the large waiting room at the rear of the restaurant building were found to be inadequate and were much enlarged and improved. A matron was placed in charge of the ladies toilet to afford information and to keep the rooms clean and tidy.

New Shelters.—At "Inspiration Point," a select spot on the edge of the high bank of the river, from which choice views of the falls and gorge are obtained, the platform was enlarged and a spacious open rustic shelter erected for the accommodation of appreciative visitors. The design of the structure is cruciform in plan with high lantern storied octagonal terminals at either extremity of the long arms. Ornamental seats of rustic work form part of the design, and it is intended to have ornamental and flowering creepers of various kinds over the structure in the spring. The under side of the roof has yet to be ceiled with white cedar bark. The character of the building has been highly commended, and when the work is fully completed the *tout ensemble* will, without doubt, form an attractive feature to the landscape.

Driveways Widened.—At the driveway turnouts near "Inspiration Point" and "Ramblers' Rest," the roadways have been widened to permit of two carriages passing freely, and wide cut stone curbings substituted for the narrow ones previously used.

Stone Curbing Extension.—At Table Rock the dressed stone curbings were extended in either direction and the roadway graded to correspond with the levels of the same.

Improvements at Sumac Island.—The old wooden carding mill at Sumac Island which has long been one of the ancient landmarks of the district, but whose timbers were found to be in a very decayed condition, was pulled down, and only so much of the foundation of the structure left as would protect the pump supplying Clark Hill with water, a right which is reserved for that purpose in perpetuity by the deed of the property from Mr. Sutherland Macklem. The ground occupied by the site of the building was levelled and graded and covered with good soil which will be planted next spring with suitable trees and shrubs.

On the river side of the old mill and immediately in front of the wildest portion of the "White Horse Rapids," a broad foot bridge has been constructed, leading the main pathway by the very edge of the madly rushing water. The stringers of this bridge are of round unbarked white pine and rest upon rustic

piers of cedar work. The railings are also of cedar wrought out in design, and the whole forms a pleasant feature of the landscape. The bridge affords visitors an unrivalled view of the rapids and cannot but be much appreciated by them. A rustic arbor will be erected here in the spring.

Shore Protection.—In my report of last year attention was drawn to the necessity for immediate action in providing protection works around the base of the high bank of the river opposite the Dufferin Islands. For the whole length of this reach of the river the stream is very swift, and as the outline of the shore is convex the force of the current is exercised in cutting into the bank where it is not protected. Many years ago a light timber work projection appears to have extended around the whole of the distance, but it has been undermined and carried away from time to time until now only about one hundred feet in all remains, and of this not one-half is of any practical use.

Early in the spring it became apparent that prompt action would be required to save large spaces of the nicely wooded side slopes from ruin, and work was begun at the two most accessible points and pushed forward as rapidly as possible. In the reconstruction of this protection it was decided that provision be made for a promenade being carried along the whole of the distance and the beautiful "Riverside Ramble" extended to Dufferin Gate. Heavy cribwork has been constructed for a distance of 600 feet down stream from the Dufferin Gate, and a short distance farther on another reach of 200 feet was built, covering two of the points where great slides in the bank took place years ago, and where further damage was imminent. The remaining portions of the unprotected bank, some 1,250 feet in all, will require to be taken in hand in the spring. This work is somewhat costly as the large quantity of stone required for loading the cribs and filling in behind them to stiffen the toe of the bank has to be brought some distance. When completed, however, the work will for many years amply protect the shore from further damage, and provide a delightful addition to the fascinating promenades of this portion of the Park.

Where the "White Horse Rapids" lash the shore of Sumac Island the old cribwork, which had been loaded with small stones only, had gone to pieces, and year by year the shore of the island and of the mainland immediately below were being eroded by the tremendous wash from the rapids. The bottom was carefully cleaned and boulders and substantial cribwork protection was placed in front of the island and carried a few feet below it. An extension of about 100 feet will be required in the spring in order to complete this work and direct the sweep of the current off from the shore.

New Trees and Shrubs.—A small but carefully selected stock of young ornamental trees and shrubs, not now found in the Park, was obtained from the most reliable nurserymen and put in the Park nursery to develop. Many of them are now fit for transplanting, and doubtless we will obtain good results from this source the coming year. We have also a large stock of very fine cuttings of shrubbery of various kinds of two or three years' growth, which will be available for the year's planting out and will help much to fill the bare spots.

A complete collection of specimens of all the different kinds of trees and shrubs which will grow in this climate should be obtained for the Park at the earliest possible date, and if it be at all practicable a substantial effort should be made in this direction the ensuing year. Of necessity the stock which we may be able to obtain of these specimen trees will require years to develop, and the sooner a beginning on a comprehensive scale is made the sooner will the Park afford that measure of instruction and delight to the student of botany and to the average visitor as well which its exceptionably favorable location and climatic conditions warrant.

Flower Garden.—The flower garden in front of the picnic grounds was, as usual, well kept and furnished with a nice display of annuals. This little plot brightens up the place very much, and is a source of great pleasure to visitors owing to the perfection to which the flowers develop under their nightly bath of spray. In enlarging the grounds provision has not been made for extending the flower beds, it being considered more desirable to ornament with hardy herbaceous plants which, when once planted, will last forever.

New Pathway.—A new gravelled walk was constructed to the west of the electric railway tracks from the restaurant to Table Rock House, and a series of beds made in the margin in which we hope to try rhododendrons and other choice highly flowering plants. In order to afford better facilities for planting out our flower beds in the early summer a small greenhouse has been erected near the gardener's residence, and, through the courtesy of several gentlemen, a good beginning has been made in providing stock for this purpose at small outlay.

Double Track for Electric Railway.—The doubling of the track of the electric railway through the Park of course required some few changes in the grounds and the transplanting of some of our shrubbery. The effect of the two tracks has not, however, been detrimental to the scenery, the strip of lawn between the tracks and the uniformly spread and finely broken layer of macadam covering the ties and reducing the obtrusiveness of the railway to a minimum. The works to be performed by the railway company under the specifications furnished them have not been fully completed yet.

The gravel pit has had the sides nicely sloped and a water pipe of sufficient dimensions to keep it filled with water at all times laid from the river so as to ensure a supply by gravitation. An attractive feature will be made of this hitherto unsightly excavation by forming an ornamental pond with islands for the culture of aquatic plants of various descriptions and possibly other forms of life as well.

Macadamizing River Road.—Outside the Park proper a large expenditure was incurred in connection with the roadway leading along the river bank in front of the town. This roadway has long been in a very bad condition, no repairs of consequence having been made to it since it was acquired in 1887, and was then considered out of order. In granting permission to the Electric Railway Company to double track the line, of necessity, the roadway had to be taken into account, as in many places the travelled portion was interfered with by the laying of the second track. Under the specifications governing the work the Railway Company were required to grade a roadway 18 feet wide to a level with the railway for the whole distance of 2 2-10 miles occupied by the roadway, and to properly macadamize one-half of this distance, the remaining half to be macadamized by the Park. Under an arrangement made with the town authorities, part of the cost of the work to be done by the Park was to be borne by the town. The whole of the roadway including the footpath has now been put in good order, with the exception of the stoning of a small piece at the north end of the town between Muddy Run and the Whirlpool over which there is but little travel. The macadamizing of this piece will be completed when the town authorities implement their agreement and pay the one thousand dollars promised.

Outlying Territory.—North of the town along the chain reserve and talus which extend to Queenston, very little work has been done. The dead wood along the edge of the high bank, which looked unsightly from the cars of the electric railway, was all cut down and cleared away, and a little cleaning up done at Wintergreen Point. A very great improvement could be made to this long reach of territory by judicious planting between the railway and the cliff at certain

points, of low flowering shrubbery that would brighten up the field of view, and by the setting out on the landward side where the soil will admit of it, of some good indigenous trees, such as the flowering dogwoods and soft maples.

Flora of the Park.—During the year the Park gardener, Mr. Roderick Cameron, has been assiduous in his efforts to complete the collection of the flora found growing without cultivation within the Park domain. Notwithstanding that the lichens and some other families have not been taken in hand, we have now considerably over nine hundred distinct species, embracing 105 families and 147 genera collected, mounted and catalogued as the result of his zeal and intelligence. The collection is very highly praised by Professor John Macoun, the chief botanist attached to the Geological Survey of Canada, who has studied the botany of this particular field for over thirty-five years, and by other eminent authorities in Canada and the United States. Prof. Macoun has very kindly verified the identity of every one of these specimens, so that we are not in doubt as to the correctness of the names and families catalogued.

Many of the species are very rare and some of them had not previously been found elsewhere in the Dominion. The collection is on view in the Superintendent's office in the Park, where it may be seen at any time by students of botany or others interested in this delightful science.

The catalogue of plants will be found attached hereto. I would strongly recommend that 500 copies of this catalogue be issued in separate form for the use of high school pupils, and others who take an interest in botany.

Fatal Accident in the Park.—A serious accident occurred in the Park on the 15th September. An elderly lady from New Jersey, who came to view the Falls accompanied by her niece, having spent the day in the Park, was left alone for a few minutes in the pavilion at Inspiration Point. As she was very deaf she was cautioned by her friends to remain there until their return. For some reason, however, she sauntered across the tracks of the electric railway and was run down and killed. Her relative, who was an eye witness of the shocking affair, attributed it entirely to the unfortunate lack of hearing on the part of the old lady and exonerated the railway officials from all blame.

Notwithstanding the very large numbers of visitors carried by the electric railway to and from the Park during the year, no other accident has been recorded, a fact which reflects credit upon its careful management.

Visitors.—The number of visitors to the Park in 1894 shows a very considerable falling off from last year, the totals for the two past years being for

The year 1893	543,924
" 1894	442,828

It may, however, be noted that the figures for 1894 are higher than those recorded for any year previous to 1893 by 170,343. From the following tabulated statement it will appear that the greatest falling off in visitors was in respect to that class locally termed *tourist* travel or such as usually enter the Park in carriages. This class was in 1893 unusually large owing, doubtless, to the attractions of the World's Fair at Chicago, and in 1894 it was much limited in conse-

quence of the widespread and general depression, and stringency in business and financial matters. A comparison of figures for these years gives the following results:

	1893.	1894.
Number of carriages entering the Park	65,921	34,741
" visitors in carriages	256,724	125,415
" " by electric railway (approximate)	146,014	209,675
" pedestrians	141,186	107,738
Totals for each year	543,924	442,828

The accompanying statement gives the attendance more in detail for each month during the year 1894:

1894.	Number of carriages entering the Park.	Number of visitors in carriages.	Number of visitors by electric railway. (Approximate.)	Number of pedestrians.	Total.
January	749	2,098	1,021	3,631	6,750
February	1,671	5,751	1,375	2,641	9,767
March	966	2,694	1,754	2,591	7,039
April	1,449	4,374	1,830	6,338	12,542
May	2,012	6,736	2,525	9,383	18,644
June	3,177	11,129	12,110	10,469	33,708
July	5,607	22,509	57,336	21,699	101,544
August	7,600	30,488	82,772	28,877	142,137
September	5,342	20,514	36,282	11,607	68,403
October	2,947	9,729	8,215	6,215	24,159
November	1,591	5,167	2,575	2,544	10,286
December	1,360	4,226	1,880	1,743	7,849
Totals	34,471	125,415	209,675	107,738	442,828

Good Order Maintained.—Notwithstanding the large number of visitors in midsummer, good order was maintained throughout, and, although on several occasions gangs of professional crooks followed the excursions to the Park yet,

owing to the vigilance of the Park constables, aided by Chief Young of the Ontario police force and some members of his staff, no depredations worth noting were committed.

Year by year the attractions and accommodations which the Park affords to visitors are becoming better known to our people throughout the Province, and with the excellent facilities which the electric railway with its double track now affords the public in reaching it, there is every reason to expect that the public will learn to appreciate its advantages.

The receipts for the year are indicated in detail in the following tabulated statement.

All which is respectfully submitted.

JAMES WILSON,
Superintendent.

NIAGARA FALLS,
20th February, 1895.

1894.	Tolls over islands.	Rentals of privileges.	Sundries.	Interest on bank deposits.	Total.
	$ c.	$ c.	$ c.	$ c	$ c.
January	8 50	2,050 00	52 00		2,110 50
February	11 75		8 00		19 75
March	47 00		22 70		69 70
April	21 25	4,550 00			4,571 25
May	84 25		4 00	256 47	344 72
June	211 00	2,500 00	36 35		2,747 35
July	238 25	2,050 00			2,288 25
August	367 25				367 25
September	259 75				259 75
October	168 25	4,550 00			4,718 25
November	35 50		226 89	156 42	418 81
December	31 00	2,500 00			2,531 00
Total	1,483 75	18,200 00	349 94	412 89	20,446 58

JAMES WILSON,
Superintendent.

QUEEN VICTORIA NIAGARA FALLS PARK.

CATALOGUE OF PLANTS

WHICH HAVE BEEN FOUND GROWING WITHOUT
CULTIVATION IN THE

PARK AND ITS OUTLYING TERRITORIES.

COLLECTED, MOUNTED AND CATALOGUED FOR THE PARK HERBARIUM
IN THE SUPERINTENDENT'S OFFICE

BY
RODERICK CAMERON,
Chief Gardener.

APPENDIX

TO THE REPORT OF THE SUPERINTENDENT OF THE PARK FOR THE YEAR

1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1895.

QUEEN VICTORIA NIAGARA FALLS PARK.

JAMES WILSON, ESQ.,
Superintendent.

DEAR SIR,—Acting under your instructions I have, at odd moments during the past four years, collected a large number of specimens of the better known plants found growing without cultivation in the Park; and have mounted and catalogued them for convenience of reference.

So far 105 families, comprising 417 genera and 915 species, have been found; and I have no doubt that many others will yet be discovered. As you desired to have the catalogue embrace only such plants as have been mounted and are on evidence in the Herbarium, I have not included any of the many other species not found by me but which have been noted by visiting botanists from time to time in the immediate vicinity of the Park.

I have to thank Professor John Macoun, the eminent Chief Botanist of the Geological Survey of Canada for verifying the names of the several species and for many acts of courtesy and words of encouragement.

The lichens and other families have not yet been taken in hand for want of time. These will add a considerable number of species to the number above noted.

The whole respectfully submitted.

RODERICK CAMERON,
Gardener.

NAMES OF THE NATURAL FAMILIES OF PLANTS.

Order.		No. of genera.	No. of species.
1	Ranunculaceæ	10	22
2	Magnoliaceæ	2	3
3	Anonaceæ	1	1
4	Menispermaceæ	1	1
5	Berberidaceæ	3	3
6	Nympheæceæ	1	2
7	Sarraceniaceæ	1	1
8	Papaveraceæ	3	3
9	Fumariaceæ	1	2
10	Cruciferæ	15	30
11	Capparidaceæ	1	1
13	Cistaceæ	1	1
14	Violaceæ	2	13
15	Caryophyllaceæ	8	16
16	Portulacaceæ	2	3
18	Hypericaceæ	2	7
20	Malvaceæ	3	4
21	Tiliaceæ	1	2
22	Linaceæ	1	1
23	Geraniaceæ	3	6
24	Rutaceæ	2	3
25	Ilicineæ	1	
26	Celastraceæ	2	3
27	Rhamnaceæ	1	1
28	Vitaceæ	2	3
29	Sapindaceæ	4	6
30	Anacardiaceæ	1	5
31	Polygalaceæ	1	3
32	Leguminoseæ	13	32
33	Rosaceæ	13	46
35	Saxifragaceæ	6	12
36	Crassulaceæ	2	3
38	Hamamelaceæ	1	1
39	Halòrageæ	1	2
41	Lythraceæ	2	2
42	Onagraceæ	5	11
	Order 47. FICOIDEÆ.—Ice Plant Family.		
	Ficoideæ	1	1
48	Umbelliferæ	14	18
49	Araliaceæ	1	5
50	Cornaceæ	2	9
51	Caprifoliaceæ	6	19
52	Rubiaceæ	4	14
54	Dipsaceæ	1	1
55	Compositæ	40	87

Order.	No. of genera.	No. of species.
56 Lobeliaceæ	1	4
57 Campanulaceæ	2	6
58 Ericaceæ	10	19
61 Primulaceæ	3	7
65 Oleaceæ	3	6
66 Apocynaceæ	1	2
67 Asclepiadaceæ	2	6
69 Gentianaceæ	2	3
70 Polemoniaceæ	2	2
71 Hydrophyllaceæ	1	2
72 Borraginaceæ	6	11
73 Convolvulaceæ	2	3
74 Solanaceæ	4	8
75 Scrophulariaceæ	14	28
76 Orobanchaceæ	3	3
77 Lentibulaceæ	1	2
78 Bignoniaceæ	1	1
80 Acanthaceæ	1	1
81 Verbenaceæ	2	3
82 Labiatæ	16	24
83 Plantaginaceæ	1	2
86 Amarantaceæ	1	2
87 Chenopodiaceæ	3	6
88 Phytolaccaceæ	1	1
89 Polygonaceæ	3	16
91 Aristolochiaceæ	1	1
92 Piperaceæ	1	1
93 Lauraceæ	2	2
94 Thymeleaceæ	1	1
96 Elæagnaceæ	1	1
97 Santalaceæ	1	1
98 Euphorbiaceæ	2	3
99 Urticaceæ	8	9
100 Plantanaceæ	1	1
101 Juglandaceæ	2	5
103 Cupuliferæ	6	14
104 Salicaceæ	2	9
106 Ceratophyllaceæ	1	1
107 Coniferæ	6	10
108 Hydrocharidaceæ	3	3
110 Orchidaceæ	10	20
113 Iridaceæ	2	2
114 Amaryllidaceæ	1	1
115 Dioscoreaceæ	1	1
116 Liliaceæ	11	25
117 Pontederiaceæ	2	2
121 Juncaceæ	2	12
122 Typhaceæ	2	4
123 Araceæ	2	2
125 Alismaceæ	3	6
126 Naiadaceæ	2	10
128 Cyperaceæ	6	50

Order.	No. of genera.	No. of species.
129 Gramineæ	26	45
130 Equisetaceæ	1	7
131 Filices	15	42
132 Ophioglossaceæ	..	..
133 Lycopodiaceæ	1	2
134 Selaginellaceæ	1	1
Hepaticæ	1	5
Musci	18	36
Lichenes		20

Order 1. RANUNCULACEÆ.—Crowfoot Family.

CLEMATIS.

Clematis Virginiana ..... Virgin's Bower.

ANEMONE.

Anemone cylindrica ..... Long-fruited Anemone.
Anemone parviflora ..... Small-flowered Anemone.
Anemone nemorosa ..... Wood Anemone or Wind-flower.

HEPATICA.—Liver Leaf.

Hepatica triloba ..... Round-lobed Hepatica.
Hepatica acutiloba ..... Sharp-lobed Hepatica.

THALICTRUM.—Meadow Rue.

Thalictrum anemonoides ..... Rue Anemone.
Thalictrum polygamum ..... Meadow Rue.
Thalictrum dioicum ..... Early Meadow Rue.

RANUNCULUS.—Crowfoot, Buttercup.

Ranunculus aquatilis var trichophyllus .. Water Crowfoot.
Ranunculus sceleratus ..... Cursed Crowfoot.
Ranunculus recurvatus ..... Hooked Crowfoot.
Ranunculus Pennsylvanicus ..... Bristly Crowfoot.
Ranunculus fascicularis ..... Early Crowfoot.
Ranunculus repens ..... Creeping Crowfoot.
Ranunculus acris ..... Buttercup Crowfoot.

CALTHA.—Marsh Marigold.

Caltha palustris ..... Marsh marigold.

COPTIS.—Gold Thread.

Coptis trifolia ..... Three-leaved Gold thread.

AQUILEGIA.—Columbine.

Aquilegia Canadensis ..... Wild Columbine

ACTÆA.—Baneberry.

Actæa spicata var rubra.....Red Baneberry.
Actæa alba .....White Baneberry.

CIMICIFUGA.—Bugbane.

Cimicifuga racemosa .....Black Snakeroot.

Order 2. MAGNOLIACEÆ.—Magnolia Family.

MAGNOLIA.

Magnolia acuminata .....Cucumber Tree.
Magnolia umbrella .....Umbrella Tree.

LIRIODENDRON.

Liriodendron tulipifera .....Tulip tree.

Order 3. ANONACEÆ.—Custard Apple Family

ASIMINA.

Asimina triloba .....Papaw tree.

Order 4. MENISPERMACEÆ.—Moonseed Family.

MENISPERMUM.

Menispermum Canadense .....Moonseed.

Order 5. BERBERIDACEÆ.—Barberry Family.

BERBERIS.

Berberis vulgaris..... Common barberry.

CAULOPHYLLUM.

Caulophyllum thalictroides .....Blue cohosh or Pappoose-root.

PODOPHYLLUM.

Podophyllum peltatum .....May apple.

Order 6. NYMPHEÆACEÆ.—Water Lily Family.

NYMPHÆA.

Nymphæa odorata .....White water lily.
Nuphar advena .....Yellow water lily.

Order 7. SARRACENIACEÆ.—Pitcher Plant Family.

SARRACENIA.

Sarracenia purpurea .....Side saddle flower.

Order 8. PAPAVERACEÆ.—Poppy Family.

PAPAVER.

Papaver somniferum .....Common poppy.

CHELIDONIUM.

Chelidonium majus .....Celandine.

SANGUINARIA.

Sanguinaria Canadensis.....Bloodroot.

Order 9. FUMARIACEÆ.—Fumitory Family.

DICENTRA.

Dicentra Cucullaria.....Dutchman's breeches.
Dicentra Canadensis .....Squirrel corn.

Order 10. CRUCIFERÆ.—Mustard Family.

NASTURTIUM.

Nasturtium officinale .....True water cress.
Nasturtium palustre .....Marsh cress.
Nasturtium palustre var hispidum ....Marsh cress.
Nasturtium Armoracia .....Horse radish.

HESPERIS.—Rocket.

Hesperis matronalis.....Dame's Violet.

DENTARIA.—Toothwort.

Dentaria diphylla .....Toothwort pepper root.
Dentaria laciniata .....Toothwort pepper root.

LUNARIA.—Satin Flower.

Lunaria biennis .....Honesty.

CARDAMINE.—Bitter Cress.

Cardamine rhomboidea .....Spring cress.
Cardamine rhomboidea var purpurea ..Spring cress.
Cardamine hirsuta .....Small bitter cress.

ARABIS.—Rock Cress.

Arabis lyrata .....Rock cress.
Arabis confinis.....Rock cress.
Arabis hirsuta .....Rock cress.
Arabis lævigata .....Rock cress.
Arabis Canadensis .....Sickle pod.
Arabis perfoliata .....Tower mustard.

BARBAREA.—Winter Cress.

Barbarea vulgaris .....Common winter cress.
Barbarea vulgaris var stricta..... ....Common winter cress.

ERYSIMUM.—Treacle Mustard.

Erysimum cheiranthoides .....Worm seed mustard.

SISYMBRIUM.

Sisybrium officinale..... .....Hedge mustard.

BRASSICA.

Brassica sinapistrum or sinapis arvensis..English charlock.
Brassica (or sinapis) nigra.....Black mustard.
Brassica rapa .....Turnip.

ALYSSUM.

Alyssum calycinum.....Yellow alyssum.

CAMELINA.

Camelina sativa .....False flax.

CAPSELLA.

Capsella Bursa-pastoris .....Shepherd's purse.

LEPIDIUM.—Pepperwort.

Lepidium intermedium .....Wild pepper grass.
Lepidium campestre ....Pepperwort pepper grass.

CAKILE.

Cakile Americana .....American sea rocket.

Order 11. CAPPARIDACEÆ.—Caper Family.

POLANISIA.

Polanisia graveolens .....Polanisia.

Order 13. CISTACEÆ.—Rock Rose Family.

Helianthemum Canadense .....Frost weed.

Order 14. VIOLACEÆ.—Violet Family.

Solea concolor .....Green violet.

VIOLA.—Heart's-ease.

Viola rotundifolia ..... Round-leaved violet.
Viola lanceolata ..... Lance-leaved violet.
Viola blanda ..... Sweet white violet.
Viola odorata ..... Sweet or English violet.
Viola palustris ..... Marsh violet.
Viola palmata var cucullata ..... Common blue violet.
Viola canina var sylvestris ..... Dog violet.
Viola rostrata ..... Long-spurred violet.
Viola Canadensis ..... Canada violet.
Viola pubescens ..... Downy yellow violet.
Viola eriocephalus .....
Viola tricolor ..... Pansy or heartsease.

Order 15. CARYOPHYLLACEÆ.—Pink Family.

DIANTHUS.—Carnation.

Dianthus Armeria ..... Deptford pink.

SAPONARIA.—Soapwort.

Saponaria officinalis ..... Bouncing Bet.

SILENE.

Silene antirrhina ..... Sleepy catchfly.

LYCHNIS.—Cockle.

Lychnis vespertina ..... Evening lychnis.
Lychnis Githago ..... Corn cockle.
Lychnis diurna ..... Ragged Robin.

ARENARIA.—Sandwort.

Arenaria serpyllifolia ..... Thyme leaved sandwort.
Arenaria lateriflora ..... Sandwort.

STELLARIA.

Stellaria media ..... Common chickweed.
Stellaria longifolia ..... Long-leaved stitchwort.
Stellaria longipes ..... Long-stalked stitchwort.

CERASTIUM.

Cerastium vulgatum ..... Mouse-ear chickweed.
Cerastium viscosum ..... Larger mouse-ear chickweed.
Cerastium nutans ..... Annual chickweed.
Cerastium arvense ..... Field chickweed.

Order 16. PORTULACACEÆ.—Purslane Family.

Portulaca oleracea ..... Common purslane.

CLAYTONIA.

Claytoniai Virginica.....Narrow-leaved spring beauty.
Claytonia Caroliniana.....Broad-leaved spring beauty

Order 18. HYPERICACEÆ.—St. John's Wort Family.

Hypericum Kalmianum.....Kalm's St. John's wort.
Hypericum perforatum.....Common St. John's wort.
Hypericum mutilum.....Hypericum.
Hypericum maculatum.....Hypericum, Corymbed
Hypericum Canadense.....Hypericum.
Hypericum Canadense var majus.....Hypericum.

ELODES.

Elodes Virginica.....Marsh St. John's wort.

Order 20. MALVACEÆ.—Mallow Family.

Malva rotundifolia.....Common mallow.
Malva moschata.....Musk mallow.

ABUTILON.—Indian Mallow.

Abutilon Avicennæ.....Velvet leaf.

HIBISCUS.—Rose Mallow.

Hibiscus Trionum.....Bladder ketmia.

Order 21. TILIACEÆ.—Linden Family.

Tilia Americana.....Basswood.
Tilia Europæa.....European linden.

Order 22. LINACEÆ.—Flax Family.

Linum usitatissimum.....Common flax.

Order 23. GERANIACEÆ.—Geranium Family

Geranium maculatum.....Wild cranesbill.
Geranium pusillum.....Small flowered cranesbill.
Geranium Robertianum.....Herb Robert.

IMPATIENS.—Balsam Jewel Weed.

Impatiens pallida.....Pale touch-me-not.
Impatiens fulva.....Spotted touch-me-not.

OXALIS.—Wood Sorrel.

Oxalis stricta.....Yellow wood sorrel.

Order 24. RUTACEÆ.—Rue Family.

ZANTHOXYLUM.

Zanthoxylum Americanum.....Prickly ash.

PTELEA.—Shrubby Trefoil.

Ptelea trifoliata .....Hop tree.
Ailanthus glandulosus .....Tree of Heaven.

Order 25. ILICINEÆ.—Holly Family.

ILEX.

Ilex verticillata .....Black alder winterberry.

Order 26. CELASTRACEÆ.—Staff Tree Family.

CELASTRUS.

Celastrus scandens .....Wax work or climbing bitter sweet.

EUONYMUS.

Euonymus atropurpureus .....Strawberry tree.
Euonymus obovatus .....Trailing euonymus.

Order 27. RHAMNACEÆ.—Buckthorn Family.

CEANOTHUS.

Ceanothus Americanus .....New Jersey tea.

Order 28. VITACEÆ.—Vine Family.

VITIS.—Grape.

Vitis æstivalis .....Summer grape.
Vitis riparia .....Frost grape.

AMPELOPSIS.—Virginian Creeper.

Ampelopsis quinquefolia.....Virginian creeper.

Order 29. SAPINDACEÆ.—Soapberry Family.

STAPHYLEA.

Staphylea trifolia.....American bladder nut.

ÆSCULUS.

Æsculus Hippocastanum.....Common horse-chestnut.

ACER.—Maple.

Acer spicatum .....Mountain maple.
Acer saccharinum .....Sugar or rock maple.
Acer dasycarpum.....White or rock maple.
Acer rubrum .....Red or soft maple.

NEGUNDO.—Ash Leaved Maple or box-elder.

Negundo aceroides .....Box elder.

Order 30. ANACARDIACEÆ.—Cashew Family.

RHUS.—Sumach.

Rhus typhina	Stag horn sumach.
Rhus venenata	Poison sumach, or dogwood.
Rhus toxicodendron	Poison ivy, or poison oak.
Rhus aromatica	Fragrant sumach.
Rhus toxicodendron var radicans	Poison ivy.

Order 31. POLYGALACEÆ.—Milk Wort Family.

Polygala verticillata	Milk wort.
Polygala senega	Seneca snakeroot.

Order 32. LEGUMINOSÆ.—Pulse Family.

LUPINUS.

Lupinus perennis	Wild lupine.

TRIFOLIUM.

Trifolium arvense	Rabbit foot clover.
Trifolium pratense	Red clover.
Trifolium repens	White clover.
Trifolium agrarium	Yellow or hop clover.
Trifolium procumbens	Low hop clover.
Trifolium hybridum	Alsike.

MELILOTUS.—Sweet Clover.

Melilotus officinalis	Yellow melilot.
Melilotus alba	White melilot.

MEDICAGO.—Medick.

Medicago sativa	Lucerne.
Medicago lupulina	Black medick.

ROBINIA.—Locust Tree.

Robinia Pseudacacia	Common locust or false Acacia.
Robinia viscosa	Clammy locust.

ASTRAGALUS.

Astragalus Canadensis	Milk vetch.
Astragalus Cooperi	Milk vetch.

DESMODIUM.—Tick Trefoil.

Desmodium nudiflorum	Tick trefoil.
Desmodium acuminatum	Tick trefoil.
Desmodium rotundifolium	Tick trefoil.
Desmodium cuspidatum	Tick trefoil.
Desmodium paniculatum	Tick trefoil.
Desmodium Canadense	Tick trefoil.
Desmodium rigidum	Tick trefoil.

LESPEDEZA.

Lespedeza reticulata ..... Bush clover.
Lespedeza hirta ..... Bush clover.

VICIA.—Vetch. Tare.

Vicia Cracca ..... Vetch.
Vicia Caroliniana ..... Vetch.
Vicia Americana ..... Vetch.

LATHYRUS.—Everlasting Pea.

Lathyrus ochroleucus ..... Vetchling.
Lathyrus palustris ..... Marsh vetchling.

APIOS.—Wild Bean.

Apios tuberosa ..... Ground nut.

PHASEOLUS.

Phaseolus diversifolius ..... Kidney bean.

AMPHICARPÆA.—Hog Peanut.

Amphicarpæa monoica ..... Hog peanut.

Order 33. ROSACEÆ.—Rose Family.

PRUNUS.—Plum.

Prunus Americana ..... Wild yellow or red plum.
Prunus Pennsylvanica ..... Wild red cherry.
Prunus Virginiana ..... Choke cherry.
Prunus serotina ..... Wild black cherry.

SPIRÆA.—Meadow-sweet.

Spiræa opulifolia ..... Nine bark.
Spiræa salicifolia ..... Meadow sweet.

AGRIMONIA.

Agrimonia Eupatoria ..... Common agrimony.
Agrimonia parviflora ..... Small flowered agrimony.

GEUM.—Avens.

Geum album ..... Avens.
Geum strictum ..... Avens.
Geum rivale ..... Purple Avens

WALDSTEINIA.

Waldsteinia fragarioides ..... Barren strawberry.

POTENTILLA.—Cinque-foil, Five Finger.

Potentilla Canadensis	Cinque foil.
Potentilla Canadensis var simplex	Five finger.
Potentilla argentea	Five finger.
Potentilla recta	Five finger.
Potentilla Anserina	Silver weed.
Potentilla palustris	Marsh five finger.

FRAGARIA.

Fragaria Virginiana	Wild strawberry.
Fragaria vesca	Wild strawberry.

DALIBARDA.

Dalibarda repens	Dalibarda.

RUBUS.—Bramble.

Rubus odoratus	Purple flowering raspberry.
Rubus triflorus	Dwarf raspberry.
Rubus strigosus	Wild red raspberry.
Rubus occidentalis	Black raspberry.
Rubus villosus	High blackberry.
Rubus Canadensis	Low blackberry.
Rubus hispidus	Running swamp blackberry.

ROSA.—Rose.

Rosa Carolina	Swamp rose.
Rosa blanda	Early wild rose.
Rosa rubiginosa	Sweet brier.
Rosa micrantha	Smaller sweet brier.

CRATÆGUS.—Hawthorn.

Cratægus Oxyacantha	English hawthorn.
Cratægus coccinea var macracantha	Large spurred thorn.
Cratægus coccinea	Scarlet fruited thorn.
Cratægus Crusgalli	Cockspur thorn.

PYRUS.

Pyrus malus	Apple.
Pyrus communus	Pear.
Pyrus coronaria	Wild Crab apple.
Pyrus arbutifolia	Chokeberry.
Pyrus Americana	Mountain ash.
Pyrus Aucuparia	European rowan tree.

AMELANCHIER.

Amelanchier Canadensis	Shad bush. Service berry.
Amelanchier Canadensis, var rotundifolia	Round leaved amelanchier.
Amelanchier Canadensis, var oblongifolia	Juneberry.

Order 35. SAXIFRAGACEÆ.—Saxifrage Family.

RIBES.—Currant, Gooseberry.

Ribes Cynosbati ..... Wild gooseberry.
Ribes prostratum ..... Fetid currant.
Ribes floridum ..... Wild black currant.
Ribes rubrum ..... Red currant.
Ribes aureum ..... Buffalo currant.
Ribes oxycanthoides ..... Swamp gooseberry.

PARNASSIA.

Parnassia Caroliniana ..... Grass of Parnassus.

SAXIFRAGA.

Saxifraga Virginiensis ..... Early saxifrage.

MITELLA.

Mitella diphylla ..... Mitrewort.
Mitella nuda ..... Mitrewort.

TIARELLA.

Tiarella cordifolia ..... False mitrewort.

CHRYSOSPLENIUM.

Chrysosplenium Americanum ..... Golden saxifrage.

Order 36. CRASSULACEÆ.—Orpine Family.

PENTHORUM.

Penthorum sedoides ..... Ditch stone-crop.

SEDUM.

Sedum acre ..... Mossy stone-crop.
Sedum Telephium ..... Garden orpine or live-for-ever.

Order 38. HAMAMELACEÆ.—Witch Hazel Family.

Hamamelis Virginica ..... Witch hazel.

Order 39. HALORAGEÆ.—Water Milfoil Family.

MYRIOPHYLLUM.

Myriophyllum spicatum ..... Water milfoil.
Myriophyllum verticillatum ..... Water milfoil.

Order 41. LYTHRACEÆ.—Loosestrife Family.

LYTHRUM.

Lythrum Salicaria .....Spiked loosestrife.

NESÆA.

Nesæa verticillata.....Swamp loosestrife.

Order 42. ONAGRACEÆ.—Evening Primrose Family.

CIRCÆA.

Circæa Lutetiana.....Enchanter's nightshade.
Circæa alpina.....Smaller E. nightshade.

GAURA.

Gaura biennis.....Gaura.

EPILOBIUM.

Epilobium spicatum.....Great willow herb.
Epilobium hirsutum.....Hairy willow herb.
Epilobium lineare .....Swamp willow herb.
Epilobium adencanlon .....Common willow herb.

ŒNOTHERA.

Œnothera biennis.....Evening primrose.
Œnothera pumila .....Small evening primrose.

LUDWIGIA.

Ludwigia palustris.....Water purslane.

Order 47. FICOIDEÆ.—Ice Plant Family.

MOLLUGO.—Indian Chickweed.

Mollugo verticillata.....Carpet weed.

Order 48. UMBELLIFERÆ.—Parsley Family.

HYDROCOTYLE.

Hydrocotyle Americana.....Water pennywort.

SANICULA.

Sanicula Canadensis .....Canadian black snakeroot.
Sanicula Marilandica.....Black snakeroot.

DAUCUS.

Daucus Carota.....Carrot.

HERACLEUM.

Heracleum lanatum.....Cow parsnip.

PASTINACA.

Pastinaca sativa.....Common parsnip.

ARCHANGELICA.

Archangelica atropurpurea.....Great Angelica.
Archangelica hirsuta.....Angelica.

CONIOSELINUM.

Conioselinum Canadense.....Hemlock parsley.

THASPIUM.

Thaspium barbinode.....Meadow parsnip.
Thaspium aureum .....Golden meadow parsnip

ZIZIA.

Zizia integerrima.....Zizia.

CICUTA.

Cicuta maculata.....Spotted cowbane.
Cicuta bulbifera.....Cowbane.

SIUM.

Sium cicutæfolium.....Water parsnip.

CRYPTOTÆNIA.

Cryptotænia Canadensis.....Honewort.

OSMORRHIZA.

Osmorrhiza longistylis .....Smoother sweet cicely.
Osmorrhiza brevistylis .....Hairy sweet cicely.

CONIUM.

Conium maculatum.....Poison hemlock.

Order 49. ARALIACEÆ.—Ginseng Family.

ARALIA.

Aralia spinosa.....Angelica tree.
Aralia racemosa .....Spikenard.
Aralia nudicaulis.....Wild sarsaparilla.
Aralia quinquefolia.....Ginseng.
Aralia trifolia.....Dwarf ginseng.

Order 50. CORNACEÆ.—Dogwood Family.

Cornus.

Cornus Canadensis ..... Dwarf cornel.
Cornus florida ..... Flowering dogwood.
Cornus circinata ..... Round leaved dogwood.
Cornus sericea ..... Silky cornel.
Cornus stolonifera ..... Red osier dogwood.
Cornus asperifolia ..... Rough leaved dogwood.
Cornus paniculata ..... Panicled cornel.
Cornus alternifolia ..... Alternate leaved cornel.

Nyssa.

Nyssa multiflora ..... Pepperidge.

Order 51. CAPRIFOLIACEÆ.—Honeysuckle Family.

Symphoricarpus.

Symphoricarpus vulgaris ..... Wolfberry.
Symphoricarpus racemosa ..... Snowberry.
Symphoricarpus racemosus, var paniciflorus ..... Low snowberry.

Lonicera.

Lonicera sempervirens ..... Trumpet honeysuckle.
Lonicera parviflora ..... Small honeysuckle.
Lonicera hirsuta ..... Honeysuckle.
Lonicera ciliata ..... Fly honeysuckle.
Lonicera Tartarica ..... Tartarian honeysuckle.

Diervilla.

Diervilla tritida ..... Bush honeysuckle.

Triosteum.

Triosteum perfoliatum ..... Horse gentian.

Sambucus.

Sambucus Canadensis ..... Elder.
Sambucus pubens ..... Red berried elder.

Viburnum.

Viburnum Lentago ..... Sheep berry.
Viburnum dentatum ..... Arrow wood.
Viburnum cassinoides ..... Withe rod.
Viburnum pubescens ..... Downy arrowwood.
Viburnum acerifolium ..... Maple leaved arrowwood.
Viburnum Opulus ..... Cranberry tree.

Order 52. RUBIACEÆ.—Madder Family.

GALIUM.

Galium Aparine ..... Cleavers.
Galium asprellum ..... Rough bedstraw.
Galium trifidum ..... Small bedstraw.
Galium trifedum, var tinctorium ..... Bedstraw.
Galium triflorum ..... Sweet bedstraw.
Galium pilosum ..... Bedstraw.
Galium circæzans ..... Wild liquorice.
Galium lanceolatum ..... Wild liquorice.
Galium boreale ..... Northern bedstraw.
Galium verum ..... Yellow bedstraw.

CEPHALANTHUS.

Cephalanthus occidentalis ..... Button bush.

MITCHELLA.

Mitchella repens ..... Partridge berry.

HOUSTONIA.

Houstonia purpurea, var ciliolata ..... Houstonia.

Order 54. DIPSACEÆ.—Teasel Family.

Dipsacus sylvestris ..... Wild teasel.

Order 55. COMPOSITÆ.—Composite Family.

EUPATORIUM.

Eupatorium purpureum ..... Joe Pye weed.
Eupatorium perfoliatum ..... Boneset.
Eupatorium ageratoides ..... White snakeroot.

TUSSILAGO.

Tussilago Farfara ..... Colt's foot.

SERICOCARPUS.

Sericocarpus solidagineus ..... White topped aster.

ASTER.

Aster corymbosus ..... Starwort.
Aster macrophyllus ..... Starwort.
Aster umbellatus ..... Starwort.
Aster lævis ..... Starwort.
Aster undulatus ..... Starwort.
Aster cordifolius ..... Starwort.
Aster sagittifolius ..... Starwort.
Aster diffusus ..... Starwort.
Aster paniculatus ..... Starwort.
Aster puniceus ..... Starwort.
Aster Novæ Angliæ Tradescanti ..... Starwort.

ERIGERON.

Erigeron bellidifolius ..... Robin's plantain.
Erigeron Philadelphicus ..... Common fleabane.
Erigeron Canadensis ..... Fleabane.
Erigeron annuus ..... Daisy fleabane.
Erigeron strigosus ..... Daisy fleabane.

BELLIS.

Bellis perennis ..... Daisy.

SOLIDAGO.

Solidago squarrosa ..... Golden rod.
Solidago bicolor ..... Golden rod.
Solidago latifolia ..... Golden rod.
Solidago cæsia ..... Golden rod.
Solidago juncea ..... Golden rod.
Solidago patula ..... Golden rod.
Solidago rugosa ..... Golden rod.
Solidago Canadensis ..... Golden rod.
Solidago lanceolata ..... Golden rod.
Solidago nemoralis ..... Golden rod.

INULA.

Inula Helenium ..... Elecampane.

POLYMNIA.

Polymnia Canadensis ..... Leaf cup.

AMBROSIA.

Ambrosia artemisiæfolia ..... Rag weed.

XANTHIUM.

Xanthium Canadense ..... Cockle bur.

HELIOPSIS.

Heliopsis scabra ..... Ox eye.

RUDBECKIA.

Rudbeckia laciniata ..... Cone flower.
Rudbeckia hirta ..... Cone flower.

HELIANTHUS.

Helianthus annuus ..... Sunflower.
Helianthus strumosus ..... Sunflower.
Helianthus divaricatus ..... Sunflower.
Helianthus decapetalus ..... Sunflower.

COREOPSIS.

Coreopsis trichosperma ..... Tick seed.

BIDENS.

Bidens frondosa ..... Beggar ticks.
Bidens connata ..... Swamp beggar ticks.
Bidens cernua ..... Smaller bur marigold.
Bidens chrysanthemoides ..... Larger bur marigold.

HELENIUM.

Helenium autumnale ..... Sneeze weed.

ANTHEMIS.

Anthemis Cotula ..... May weed.

ACHILLEA.

Achillea Millefolium ..... Yarrow.

CHRYSANTHEMUM.

Chrysanthemum Leucanthemum ..... Oxeye daisy.

TANACETUM.

Tanacetum vulgare ..... Tansy.

ARTEMISIA.

Artemisia Canadensis ..... Mugwort.
Artemisia Absinthium ..... Wormwood.
Artemisia biennis ..... Biennial wormwood.

GNAPHALIUM.

Gnaphalium polycephalum ..... Common everlasting.
Gnaphalium uliginosum ..... Low cud weed.

ANTENNARIA.

Antennaria plantaginifolia ..... Plantain leaved everlasting.

ANAPHALIS.

Anaphalis margaritacea ..... Pearly everlasting.

ERECHTHITES.

Erechthites hieracefolia ..... Fireweed.

SENECIO.

Senecio aureus ..... Golden ragwort.
Senecio aureus, var balsamitæ.

CNICUS.

Cnicus discolor ..... Thistle.
Cnicus lanceolatum ..... Pasture thistle.
Cnicus arvense ..... Canada thistle.

ARCTIUM.

Arctium Lappa .....Common burdock.

LAMPSANA.

Lampsana communis .....Nipplewort.

CICHORIUM.

Cichorium Intybus .....Succory or chicory

LEONTODON.

Leontodon autumnalis .....Fall dandelion.

CENTAUREA.

Centaurea cyanus.....Bluebottle.

HIERACIUM.

Hieracium Canadense.....Canada hawkweed.
Hieracium scabrum.....Rough hawkweed.
Hieracium venosum .....Rattlesnake weed.
Hieracium paniculatum.....Panicled hawkweed.
Hieracium marianum.....Hawkweed.
Hieracium aurantiacum .....Hawkweed.

PRENANTHES.

Prenanthes albus.....White lettuce.
Prenanthes altissimus.....Tall white lettuce.

TRAGOPOGON.

Tragopogon porrifolius.....Oyster plant.

TARAXACUM.

Taraxacum officinale .....Common dandelion.

LACTUCA.

Lactuca Canadensis.....Wild lettuce.
Lactuca Scariola .....Prickly lettuce.
Lactuca leucophæa .....False or blue lettuce.

SONCHUS.

Sonchus oleraceus .....Common sow thistle.
Sonchus asper .....Spiny-leaved sow thistle.
Sonchus arvensis.....Field sow thistle.

Order 56. LOBELIACEÆ.—Lobelia Family.

LOBELIA.

Lobelia cardinalis .....Cardinal flower.
Lobelia syphilitica ..... Great Lobelia.
Lobelia inflata.....Indian tobacco.
Lobelia Kalmii.....Kalm's Lobelia.

Order 57. CAMPANULACEÆ.—Campanula Family.

CAMPANULA.

Campanula rotundifolia ..... Harebell.
Campanula aparinoides ..... Marsh bellflower.
Campanula Americana ..... Tall bellflower.
Campanula rapunculoides ..... Bellflower.

SPECULARIA.

Specularia pertoliata ..... Venus' looking-glass.

Order 58. ERICACEÆ.—Heath Family.

GAYLUSSACIA.

Gaylussacia resinosa ..... Black huckleberry.

VACCINIUM.

Vaccinium stamineum ..... Squaw huckleberry.
Vaccinium corymbosum ..... Swamp blueberry.
Vaccinium Pennsylvanicum ..... Blueberry.

CHIOGENES.

Chiogenes hispidula ..... Creeping snowberry.

ARCTOSTAPHYLOS.

Arctostaphylos Uva-ursi ..... Bear berry.

GAULTHERIA.

Gaultheria procumbens ..... Creeping wintergreen.

CASSANDRA.

Cassandra calyculata ..... Leather leaf.

PYROLA.

Pyrola rotundifolia ..... Pyrola.
Pyrola rotundifolia, var incarnata ..... Pyrola.
Pyrola rotundifolia, var asarifolia ..... Pyrola.
Pyrola elliptica ..... Shin leaf.
Pyrola chlorantha ..... Pyrola.
Pyrola secunda ..... Pyrola.

MONESES.

Moneses uniflora ..... One-flowered pyrola.

CHIMAPHILA.

Chimaphila umbellata ..... Princess pine.
Chimaphila maculata ..... Spotted wintergreen.

MONOTROPA.

Monotropa uniflora.....Indian pipe.
Monotropa Hypopitys.....False beech-drops.

Order 61. PRIMULACEÆ.—Primrose Family.

TRIENTALIS.

Trientalis Americana .....Star flower.

STEIRONEMA.—Loosestrife.

Steironema ciliatum .....Loosestrife.
Steironema longifolium .....Loosestrife.

LYSIMACHIA.

Lysimachia thyrsiflora .....Tufted loosestrife.
Lysimachia stricta .....Loosestrife.
Lysimachia nummularia.....Moneywort.

SAMOLUS.

Samolus Valenderi, var Americanus ....Water pimpernel.

Order 65. OLEACEÆ.—Olive Family.

LIGUSTRUM.

Ligustrum vulgare ..... Privet or prim.

SYRINGA.

Syringa vulgaris .....Lilac.

FRAXINUS.

Fraxinus Americana .....White ash.
Fraxinus excelsior .....European ash.
Fraxinus pubescens.....Red ash.
Fraxinus sambucifolia.....Black or water ash.

Order 66. APOCYNACEÆ.—Dogbane Family.

APOCYNUM.

Apocynum cannabinum .....Indian hemp.
Apocynum androsæmifolium.....Dogbane.

Order 67. ASCLEPIADACEÆ.—Milkweed Family.

ASCLEPIAS.

Asclepias cornuti.....Common milkweed.
Asclepias phytolaccoides .....Poke milkweed.
Asclepias quadrifolia .....Milkweed.
Asclepias incarnata.....Swamp milkweed.
Asclepias tuberosa .....Butterfly weed.

VINCETOXICUM.

Vincetoxicum nigrum.....Climbing poison.

Order 69. GENTIANACEÆ.—Gentian Family.

FRASERA.

Frasera Carolinensis .....American Columbo.

GENTIANA.

Gentiana serrata .....Fringed gentian.
Gentiana Andrewsii .....Closed gentian.

Order 70. POLEMONIACEÆ.—Polemonium Family.

POLEMONIUM.

Polemonium reptans .....Greek valerian.

PHLOX.

Phlox divaricata .....Wild phlox.

Order 71. HYDROPHYLLACEÆ.—Waterleaf Family.

HYDROPHYLLUM.

Hydrophyllum Virginicum.....Waterleaf.
Hydrophyllum Canadense .....Waterleaf.

Order 72. BORRAGINACEÆ.—Borage Family.

ECHIUM.

Echium vulgare .....Viper's bugloss.

LYCOPSIS.

Lycopsis Arvensis .....Bugloss.

LITHOSPERMUM.

Lithospermum arvense .....Corn gromwell.
Lithospermum officinale.....Common gromwell.

MYOSOTIS.

Myosotis palustris .....Blue forget me not.
Myosotis laxa .....Forget me not.
Myosotis arvensis .....Forget me not.
Myosotis verna.....Forget me not.

ECHINOSPERMUM.

Echinospermum Lappula .....Stickseed.

CYNOGLOSSUM.

Cynoglossum officinale .....Common hound's tongue.
Cynoglossum Virginicum .....Wild comfrey.

Order 73. CONVOLVULACEÆ.—Convolvulus Family.

CONVOLVULUS.

Convolvulus sepium.....Hedge bindweed.
Convolvulus spithamæa .....Bindweed.

CUSCUTA.

Cuscuta Gronovii.....Gold thread.

Order 74. SOLANACEÆ.—Nightshade Family.

SOLANUM.

Solanum Dulcamara .....Bitter sweet.
Solanum nigrum .....Common nightshade.

PHYSALIS.

Physalis grandiflora.....Ground cherry.
Physalis pubescens .....Ground cherry.
Physalis viscosa .....Ground cherry.
Physalis lanceolata .....Ground cherry.

NICANDRA.

Nicandra physaloides.....Apple of Peru.

DATURA.

Datura Stramonium .....Thorn apple.

Order 75. SCROPHULARIACEÆ.—Figwort Family.

VERBASCUM.

Verbascum Thapsus .....Common mullein.
Verbascum Blattaria .....Moth mullein.

LINARIA.

Linaria Canadensis .....Wild toad flax.
Linaria vulgaris .....Toad flax, butter and eggs.

ANTIRRHINUM.

Antirrhinum Orontium .....Snapdragon.

SCROPHULARIA

Scrophularia nodosa .....Figwort.

CHELONE.

Chelone glabra.....Turtlehead.

PENTSTEMON.

Pentstemon pubescens.....Beard tongue.

MIMULUS.

Mimulus ringens ..... Monkey flower.

GRATIOLA.

Gratiola Virginiana ..... Hedge hyssop.

ILYSANTHES.

Ilysanthes gratioloides ..... False pimpernel.

VERONICA.

Veronica Chamædrys ..... Speedwell.
Veronica Americana ..... American brooklime.
Veronica scutellata ..... Marsh speedwell.
Veronica officinalis ..... Common speedwell.
Veronica serpyllifolia ..... Time leaved speedwell.
Veronica peregrina ..... Purslane speedwell.
Veronica arvensis ..... Corn speedwell.
Veronica agrestis ..... Field speedwell.

GERARDIA.

Gerardia purpurea ..... Purple gerardia.
Gerardia purpurea, var paupercula ..... Gerardia.
Gerardia quercifolia ..... Smooth false foxglove.
Gerardia pedicularia ..... Gerardia.

CASTILLEIA.

Castilleia coccinea ..... Painted cup.

PEDICULARIS.

Pedicularis Canadensis ..... Common lousewort.
Pedicularis lanceolata ..... Lousewort.

MELAMPYRUM.

Melampyrum Americanum ..... Cow wheat.

Order 76. OROBANCHACEÆ.—Broom Rape Family.

EPIPHEGUS.

Epiphegus Virginiana ..... Beech-drops. Cancer root.

CONOPHOLIS.

Conopholis Americana ..... Squaw-root. Cancer root.

APHYLLON.

Aphyllon uniflorum ..... One-flowered cancer root.

Order 77. LENTIBULACEÆ.—Bladderwort Family.

UTRICULARIA.

Utricularia vulgaris ..... Greater bladderwort.
Utricularia gibba ..... Small bladderwort.

Order 78. BIGNONIACEÆ.—Bignonia Family.

MARTYNIA.

Martynia proboscidea.....Unicorn plant.

Order 80. ACANTHACEÆ.—Acanthus Family.

DIANTHERA.

Dianthera Americana.....Water willow.

Order 81. VERBENACEÆ.—Vervain Family.

VERBENA.

Verbena hastata.....Blue vervain.
Verbena urticæfolia.....White vervain.

PHRYMA.

Phryma Leptostachya.....Lopseed.

Order 82. LABIATÆ.—Mint Family.

TEUCRIUM.

Teucrium Canadense.....American Germander.

MENTHA.

Mentha Canadensis.....Canada mint.
Mentha viridis.....Spearmint.
Mentha piperita.....Peppermint.

LYCOPUS.

Lycopus Virginicus.....Bugle weed.
Lycopus sinuatus.....Water horehound.

CALAMINTHA.

Calamintha Nuttalii.....Calaminth.
Calamintha clinopodium.....Basil.

MELISSA.

Melissa officinalis.....Balm.

HEDEOMA.

Hedeoma pulegioides.....American pennyroyal.

COLLINSONIA.

Collinsonia Canadensis.....Horse balm.

MONARDA.

Monarda fistulosa.....Wild bergamot.

LOPHANTHUS.

Lophanthus nepetoides.....Giant hyssop.

NEPETA.

Nepeta Cataria.....Catnip.
Nepeta Glechoma.....Ground ivy.

PHYSOSTEGIA.

Physostegia Virginiana .....False dragonhead.

BRUNELLA.

Brunella vulgaris.....Self-heal.

SCUTELLARIA.

Scutellaria canescens .....Skullcap.
Scutellaria parvula .....Skullcap.
Scutellaria galericulata .....Skullcap.
Scutellaria lateriflora .....Skullcap.

GALEOPSIS.

Galeopsis Tetrahit .....Hemp nettle.

STACHYS.

Stachys palustris.....Hedge nettle.

LEONURUS.

Leonurus Cardiaca .....Motherwort.

Order 83. PLANTAGINACEÆ.—Plantain Family.

PLANTAGO.

Plantago major .....Common plantain.
Plantago lanceolata.....Ribgrass.

Order 86. AMARANTACEÆ.—Amaranth Family.

AMARANTUS.

Amarantus retroflexus .....Pigweed.
Amarantus albus.....Pigweed.

Order 87. CHENOPODIACEÆ.—Goosefoot Family.

CHENOPODIUM.

Chenopodium album .....Lamb's quarters.
Chenopodium glaucum .....Oak leaved goosefoot.
Chenopodium Botrys .....Jerusalem oak.

ATRIPLEX.—Orache.

Atriplex patula .....Orache.
Atriplex patula, var hastata .....Orache.

CORISPERMUM.

Corispermum hyssopifolium ..... Bugseed.

Order 88. PHYTOLACCACEÆ.—Pokeweed Family.

PHYTOLACCA.

Phytolacca decandra .....Pigeon berry.

Order 89. POLYGONACEÆ.—Buckwheat Family.

POLYGONUM.

Polygonum Hartwrightii .....Knotweed.
Polygonum orientale .....Prince's feather.
Polygonum incarnatum .....Knotweed.
Polygonum Hydropiper .....Smartweed.
Polygonum acre .....Water smartweed.
Polygonum Virginianum .....Knotweed.
Polygonum aviculare .....Knotgrass.
Polygonum aviculare, var erectum .....Knotgrass.
Polygonum arifolium .....Tear thumb.
Polygonum sagittatum .....Arrow leaved tear thumb.
Polygonum convolvulus .....Black bindweed.
Polygonum dumetorum .....Climbing false buckwheat.

FAGOPYRUM.

Fagopyrum esculentum .....Buckwheat.

RUMEX.

Rumex crispus .....Curled dock.
Rumex sanguineus .....Bloody veined dock.
Rumex Acetosella .....Sheep sorrel.

Order 91. ARISTOLOCHIACEÆ.—Birthwort Family.

ASARUM.

Asarum Canadense .....Wild ginger.

Order 92. PIPERACEÆ.—Lizard's Tail Family.

SAURURUS.

Saururus cernuus .....Lizard's tail.

Order 93. LAURACEÆ.—Laurel Family.

SASSAFRAS.

Sassafras officinale .....Sassafras.

LINDERA.

Lindera Benzoin .....Wild allspice.

Order 94.—THYMELEACEÆ.—Mezereum Family.

DAPHNE.

Daphne mezereum .....English Daphne.

Order 95. ELÆAGNACEÆ.—Oleaster Family.

SHEPHERDIA.

Shepherdia Canadensis .....Canadian shepherdia.

Order 97. SANTALACEÆ.—Sandalwood Family.

COMANDRA.

Comandra umbellata .....Bastard toad flax.

Order 98. EUPHORBIACEÆ.—Spurge Family.

EUPHORBIA.

Euphorbia maculata .....Spurge.
Euphorbia Helioscopia .....Spurge.

ACALYPHA.

Acalypha Virginica.....Three-seeded mercury.

Order 99. URTICACEÆ.—Nettle Family.

ULMUS.

Ulmus Americana .....Elm.

CELTIS.

Celtis occidentalis .....Nettle tree or sugar berry.

MORUS.

Morus rubra.. .....Red mulberry.
Morus alba .....White mulberry.

URTICA.

Urtica gracilis .....Nettle.

LAPORTEA.

Laportea Canadensis .....Wood nettle.

PILEA.

Pilea pumila.....Clearweed.

BŒHMERIA.

Bœhmeria cylindrica .....False nettle.

HUMULUS.

Humulus Lupulus .. ..Common hop.

Order 100. PLATANACEÆ.—Plane Tree Family.

PLATANUS.

Platanus Occidentalis.....Sycamore tree.

Order 101. JUGLANDACEÆ.—Walnut Family.

JUGLANS.

Juglans cinerea .....Butternut.
Juglans nigra.....Black walnut.

CARYA.

Carya alba .....Shell bark hickory.
Carya porcina .....Pig nut.
Carya amara .....Bitter nut.
Carya tomentosa.....Downy hickory.

Order 103. CUPULIFERÆ.—Oak Family.

QUERCUS.

Quercus alba .....White oak.
Quercus bicolor .....Swamp white oak.
Quercus Prinus .....Chestnut oak.
Quercus acuminata ....Yellow chestnut oak.
Quercus coccinea .....Scarlet oak.
Quercus rubra .....Red oak.
Quercus palustris.....Swamp pin oak.

FAGUS.

Fagus ferruginea.....American beech.

OSTRYA.

Ostrya Virginica.....American hop horn beam.

CARPINUS.

Carpinus Americana .....Iron wood.

BETULA.

Betula lutea .....Yellow birch.
Betula alba .....White birch.
Betula papyracea .....Paper birch.

ALNUS.

Alnus incana .....Alder.

Order 104. SALICACEÆ.—Willow Family.

SALIX.

Salix discolor .....Glaucous willow.
Salix petiolaris .....Petioled willow.
Salix alba.....White willow.
Salix Babylonica.....Weeping willow.
Salix longifolia .....Long leaved willow.

POPULUS.

Populus grandidentata ..... Large toothed aspen.
Populus monilifera ..... Cotton wood.
Populus balsamifera ..... Balsam poplar.
Populus alba ..... White poplar.
Populus tremuloides ..... Aspen.

Order 106. CERATOPHYLLACEÆ.—Hornwort Family.

CERATOPHYLLUM.

Ceratophyllum demersum ..... Hornwort.

Order 107. CONIFERÆ.—Pine Family.

PINUS.

Pinus Strobus ..... White oak.
Pinus resinosa ..... Red pine.

ABIES.

Abies balsamea ..... Balsam Fir.

TSUGA.

Tsuga Canadensis ..... Hemlock.

LARIX.

Larix Americana ..... Larch.

THUYA.

Thuya Occidentalis ..... American arbor vitæ.

JUNIPERUS.

Juniperus Virginiana ..... Red cedar.
Juniperus sabina var procumbens ..... Creeping Juniper.
Juniperus communis ..... Juniper.

TAXUS.

Taxus baccata var Canadensis ..... American yew.

Order 108. HYDROCHARIDACEÆ.—Frog's Bit Family.

ANACHARIS.

Anacharis Canadensis ..... Waterweed.

CHARA.

Chara fragilis ..... Waterweed.

VALLISNERIA.

Vallisneria spiralis ..... Eel grass. Tape grass.

Order 110. ORCHIDACEÆ.

ORCHIS.

Orchis spectabilis.....Showy orchis.

HABENARIA.

Habenaria virescens .....Rein orchis.
Habenaria viridis .....Rein orchis.
Habenaria hyperborea .....Rein orchis.
Habenaria Hookeri.....Rein orchis.
Habenaria blephariglottis .. ..White fringed orchis.
Habenaria lacera.....Ragged fringed orchis.
Habenaria psycodes .....Purple fringed orchis.

GOODYERA.

Goodyera pubescens .....Rattlesnake plantain.

SPIRANTHES.—Ladies' Tresses.

Spiranthes latifolia .....Ladies' tresses.
Spiranthes Romanzoviana .....Ladies' tresses.
Spiranthes cernua .....Ladies' tresses.

LISTERA.

Listera convallarioides.....Tway blade.

MICROSTYLIS.

Microstylis monophyllis ....Adder's mouth.

LIPARIS.

Liparis Lœselii.....Tway blade.

CORALLORHIZA.

Corallorhiza innata .....Coral root.
Corallorhiza multiflora .....Coral root.

APLECTRUM.

Aplectrum hyemale.....Adam and Eve.

CYPRIPEDIUM.

Cypripedium parviflorum .....Moccasin flower.
Cypripedium pubescens .....Moccasin flower.

Order 113. IRIDACEÆ.—Iris Family.

Iris versicolor .....Large blue flag.

SISYRINCHIUM.

Sisyrinchium anceps .....Blue-eyed grass.

Order 114. AMARYLLIDACEÆ.—Amaryllis Family.

HYPOXYS.

Hypoxys erecta .....Star grass.

Order 115. DIOSCOREACEÆ.—Yam Family.

DIOSCOREA.

Dioscorea villosa .....Wild yam root.

Order 116. LILIACEÆ.—Lily Family.

TRILLIUM.

Trillium grandiflorum.....Large white trillium.
Trillium erectum.....Purple trillium.
Trillium erectum, var viride .....Trillium.

MEDEOLA.

Medeola Virginica .....Indian cucumber.

MELANTHIUM.

Melanthium Virginicum .....Bunch flower.

UVULARIA.

Uvularia grandiflora .....Bellwort.
Uvularia perfoliata.....Smaller bellwort.
Uvularia sessilifolia.....Bellwort.

SMILACINA.

Smilacina racemosa.....False spikenard.
Smilacina stellata .....False Solomon's seal.
Smilacina trifolia .....False Solomon's seal.
Smilacina bifolia.....False Solomon's seal.

POLYGONATUM.

Polygonatum giganteum .....Solomon's seal.
Polygonatum biflorum.....Solomon's seal.

ASPARAGUS.

Asparagus officinalis .....Asparagus.

LILIUM.

Lilium Philadelphicum .....Wild orange red lily.
Lilium Canadense .....Wild yellow lily.
Lilium Carolinianum .....Lily.

ERYTHRONIUM.

Erythronium Americanum.....Yellow adder's tongue.
Erythronium albidum.....White dog's tooth violet.

ALLIUM.

Allium tricoccum.....Wild leek.
Allium Canadense.....Wild garlic.

SMILAX.

Smilax hispida.....Greenbrier.
Smilax herbacea.....Carrion flower.

Order 117. PONTEDERIACEÆ.—Pickerel Weed Family.

PONTEDERIA.

Pontederia cordata, var angustifolia....Pickerel weed.

SCHOLLERA.

Schollera graminea.....Water star grass.

Order 121. JUNCACEÆ.—Rush Family.

LUZULA.

Luzula pilosa.....Woodrush.
Luzula campestris, var pallescens.....Woodrush.

JUNCUS.

Juncus effusus.....Soft rush.
Juncus filiformis.....Rush.
Juncus Balticus.....Rush.
Juncus Bufonius.....Rush.
Juncus tenuis.....Rush.
Juncus articulatus.....Rush.
Juncus alpinus var insignis.....Rush.
Juncus nodosus.....Rush.
Juncus nodosus, var megacephalus....Rush.
Juncus Canadensis, var longicaudatus..Rush.

Order 122. TYPHACEÆ.—Cat-Tail Family.

TYPHA.

Typha latifolia.....Cat-tail flag.
Typha angustifolia.....Small cat-tail flag.

SPARGANIUM.

Sparganium eurycarpum.....Bur-reed.
Sparganium simplex.....Bur-reed.

Order 123. ARACEÆ.—Arum Family.

ARISÆMA.

Arisæma triphyllum ..... Indian turnip.

SYMPLOCARPUS.

Symplocarpus fœtidus ..... Skunk cabbage.

Order 125. ALISMACEÆ.—Water Plantain Family.

TRIGLOCHIN.

Triglochin palustre ..... Arrow grass.

ALISMA.

Alisma Plantago var Americanum ..... Water plantain.

SAGITTARIA.

Sagittaria variabilis ..... Arrowhead.
Sagittaria variabilis, var hastata ..... Arrowhead.
Sagittaria variabilis, var angustifolia .. Arrowhead.
Sagittaria heterophylla ..... Arrowhead.

Order 126. NAIADACEÆ.—Pondweed Family.

NAIAS.

Naias flexilis ..... Naiad.

POTAMOGETON.

Potamogeton natans ..... Pondweed.
Potamogeton natans, var prolixus .... Pondweed.
Potamogeton mucronætus ..... Pondweed.
Potamogeton prælongus ..... Pondweed.
Potamogeton perfoliatus ..... Pondweed.
Potamogeton pauciflorus ..... Pondweed.
Potamogeton pusillus ..... Pondweed.
Potamogeton zosterifolius ..... Pondweed.
Potamogeton pectinatus ..... Pondweed.

Order 128. CYPERACEÆ.—Sedge Family.

CYPERUS.

Cyperus diandrus ..... Galingale.
Cyperus esculentus ..... Galingale.
Cyperus strigosus ..... Galingale.
Cyperus Schweinitzii ..... Galingale.
Cyperus filiculmis ..... Galingale.

DULICHIUM.

Dulichium spathaceum ..... Dulichium.

ELEOCHARIS.

Eleocharis obtusa ..... Spikerush.
Eleocharis palustris ..... Spikerush.
Eleocharis acicularis ..... Spikerush.

SCIRPUS.

Scirpus pungens ..... Bulrush.
Scirpus lacustris ..... Bulrush.
Scirpus fluviatilis ..... Clubrush.
Scirpus sylvaticus ..... Clubrush.
Scirpus atrovirens ..... Clubrush.

ERIOPHORUM.

Eriophorum cyperinum ..... Cotton or wool grass.

CAREX.

Carex festucasea ..... Sedge.
Carex echinata ..... Sedge.
Carex polytrichoides ..... Sedge.
Carex tribuloides var cristata ..... Sedge.
Carex teretiuscula ..... Sedge.
Carex vulpinoidea ..... Sedge.
Carex sparganioides ..... Sedge.
Carex cephalophora ..... Sedge.
Carex rosea ..... Sedge.
Carex tenella ..... Sedge.
Carex scoparia ..... Sedge.
Carex virescens ..... Sedge.
Carex straminea ..... Sedge.
Carex stricta ..... Sedge.
Carex crinita ..... Sedge.
Carex aurea ..... Sedge.
Carex Crawei ..... Sedge.
Carex stricta var decora ..... Sedge.
Carex granularis ..... Sedge.
Carex gracillima ..... Sedge.
Carex plantaginea ..... Sedge.
Carex Careyana ..... Sedge.
Carex laxiflora var patulifolia ..... Sedge.
Carex eburnea ..... Sedge.
Carex pedunculata ..... Sedge.
Carex Pennsylvanica ..... Sedge.
Carex flava ..... Sedge.
Carex Œderi ..... Sedge.
Carex intumescens ..... Sedge.
Carex Grayii ..... Sedge.
Carex lupulina ..... Sedge.
Carex Tuckermani ..... Sedge.
Carex tribuloides ..... Sedge.
Carex triceps ..... Sedge.

Order 129. GRAMINEÆ.—Grass Family.

LEERSIA.

Leersia oryzoides.....Rice cut grass.

ALOPECURUS.

Alopecurus aristulatus.....Foxtail grass.

PHLEUM.

Phleum pratense.....Timothy.

SPOROBOLUS.

Sporobolus vaginæflorus.....Rush grass.

AGROSTIS.

Agrostis perennans.....Thin grass.
Agrostis scabra.....Hair grass.
Agrostis vulgaris.....Red top.
Agrostis alba.....White rent grass.

CINNA.

Cinnaa pendula.....Wood reed grass.

MUHLENBERGIA.

Muhlenbergia sylvatica.....Drop seed grass.
Muhlenbergia Willdenovii.....Drop seed grass.

ORYZOPSIS.

Oryzopsis asperifolia.....Mountain rice.

CYNOSURUS.

Cynosurus cristatus.....Dog's-tail grass.

DACTYLIS.

Dactylis glomerata.....Orchard grass.

GLYCERIA.

Glyceria nervata.....Fowl meadow grass.
Glyceria fluitans.....Fowl meadow grass.

POA.

Poa compressa.....Wire grass.
Poa serotina.....False red top.
Poa pratensis.....Meadow grass.
Poa debilis.....Weak meadow grass.

FESTUCA.

Festuca elatior.....Meadow fescue.
Festuca nutans.....Fescue.

BROMUS.

Bromus secalinus ..... Cheat or chess.
Bromus ciliatus ..... Brome grass.

LOLIUM.

Lolium perenne ..... Darnel or rye grass.
Lolium temulentum ..... Bearded darnell.

HORDEUM.

Hordeum jubatum ..... Squirrel-tail grass.

ELYMUS.

Elymus Virginicus ..... Lyme grass.
Elymus Canadensis ..... Lyme grass.
Elymus striatus ..... Lyme grass.
Elymus sativa ..... Lyme grass.

CHRYSOPOGON.

Chrysopogon nutans ..... Wood grass.

ASPRELLA.

Asprella hystrix ..... Bottle brush grass.

DANTHONIA.

Danthonia spicata ..... Wild oat grass.

AIRA.

Aira cæspitosa ..... Hair grass.

HOLCUS.

Holcus lanatus ..... Velvet grass.

ANTHOXANTHUM.

Anthoxanthum odoratum ..... Sweet vernal grass.

PANICUM.

Panicum sanguinale ..... Crab grass.
Panicum capillare ..... Old witch grass.
Panicum latifolium ..... Panic grass.
Panicum dichotomum ..... Panic grass.
Panicum Crus-galli ..... Barnyard grass.

SETARIA.

Setaria viridis ..... Green foxtail grass.

ANDROPOGON.

Andropogon provincialis ..... Beard grass.

AGROPYRUM.

Agropyrum caninum ..... Spear grass.

Order 130. EQUISETACEÆ.—Horsetail Family.

Equisetum.

Equisetum arvense.....Common horsetail.
Equisetum pratense.....Meadow horsetail.
Equisetum palustre.....Water horsetail.
Equisetum limosum.....River horsetail.
Equisetum hyemale.....Scouring rush.
Equisetum variegatum.....Variegated horsetail.
Equisetum scirpoides.....Little horsetail.

Order 131. FILICES.—Ferns.

Polypodium.

Polypodium vulgare.....Polypody.

Adiantum.

Adiantum pedatum.....Maidenhair.

Pteris.

Pteris aquilina.....Common brake.

Pellæa.

Pellæa gracilis.....Cliff brake.
Pellæa atropurpurea.....Cliff brake.

Asplenium.

Asplenium Trichomanes.....Spleenwort.
Asplenium angustifolium.....Spleenwort.
Asplenium thelypteroides.....Spleenwort.
Asplenium Filix fœmina.....Spleenwort.

Scolopendrium.

Scolopendrium vulgare.....Hart's-tongue.

Camptosorus.

Camptosorus rhizophyllus.....Walking leaf.

Phegopteris.

Phegopteris polypodioides.....Beech fern.
Phegopteris Dryopteris.

Aspidium.

Aspidium Thelypteris.....Shield fern.
Aspidium Noveboracense.
Aspidium spinulosum.
Aspidium spinulosum var intermedium.
Aspidium spinulosum var dilatatum.
Aspidium cristatum var Clintonianium.
Aspidium Goldianum.
Aspidium Filix mas.
Aspidium marginale.
Aspidium acrostichoides.
Aspidium acrostichoides var incisum.
Aspidium aculeatum.

CYSTOPTERIS.

Cystopteris bulbifera ..... Bladder fern.

STRUTHIOPTERIS.

Struthiopteris Germanica ..... Ostrich fern.

ONOCLEA.

Onoclea sensibilis ..... Sensitive fern.

OSMUNDA.

Osmunda regalis ..... Flowering royal fern.
Osmunda Claytoniana.
Osmunda cinnamomea ..... Cinnamon fern.

LOMARIA.

Lomaria spicant ..... Deer fern.

Order 132. OPHIOGLOSSACEÆ.—Adder's Tongue Family.

BOTRYCHIUM.

Botrychium Lunaria (Grape fern)..... Moonwort.
Botrychium lanceolatum.
Botrychium Virginicum.
Botrychium lunaroides.
Botrychium lunaroides, var obliquum.
Botrychium matricariæfolium.
Botrychium lunaroides, var dissectum.

Order 133. LYCOPODIACEÆ.—Club Moss Family.

LYCOPODIUM.

Lycopodium lucidulum ..... Club moss.
Lycopodium complanatum ..... Club moss.

Order 134. SELAGINELLACEÆ.

SELAGINELLA.

Selaginella apus.

HEPATICÆ.—Liverworts.

Preissia hemispherica ..... Liverwort.
Trichocolea tomentella ..... Liverwort.
Kantia trichomanis ..... Liverwort.
Fegatella conica ..... Liverwort.
Porella platyphylla ..... Liverwort.

MUSCI.

HYPNUM.

Hypnum chrysophyllum.
Hypnum curvifolium.
Hypnum Haldanianum.
Hypnum imponens.
Hypnum lætum.
Hypnum rivulare.
Hypnum Rutabulum.
Hypnum salebrosum.
Hypnum serpens.
Hypnum splendens.
Hypnum stellatum.
Hypnum strigosum.
Hypnum triquetrum.
Hypnum uncinatum.

MNIUM.

Mnium cuspidatum.
Mnium affine.

POLYTRICHUM.

Polytrichum juniperinum.

SPHAGNUM.

Sphagnum cymbifolium.

WEBERA.

Webera annotina.

FUNARIA.

Funaria hygrometrica.

ANOMODON.

Anomodon rostratus.
Anomodon obtusifolius.

CERATODON.

Ceratodon purpureus.

BRYUM.

Bryum intermedium.
Bryum roseum.

BARTRAMIA.

Bartramia pomiformis.

LEUCOBRYUM.

Leucobryum vulgare.

AULACOMNIUM.

Aulacomnium heterostichum.
Aulacomnium palustre.

THUIDIUM.

Thuidium delicatulum.
Thuidium recognitum.

PLAGIOTHECIUM.

Plagiothecium denticulatum.

FISSIDENS.

Fissidens adiantoides.

ATRICHUM.

Atrichum undulatum.

CLIMACIUM.

Climacium Americanum.

DICRANUM.

Dicranum scoparium.

LICHENS.

Ramalina calicaris, var fraxinea ..... Lichen.
Ramalina calicaris, var parinacea ..... Lichen.
Ramalina calicaris, var fastigiata ..... Lichen.
Alectoria jubata, var chalybeiformis .... Lichen.
Evernia prunastri ..... Lichen.
Usnea barbata, var hista..... Lichen.
Theloschistes chrysophthalmus..... Lichen.
Physcia ciliaris ..... Lichen.
Cladonia pyridata ..... Lichen.
Cladonia fimbriata ..... Lichen.
Cladonia furcata ..... Lichen.
Cladonia rangiferina ..... Lichen.
Pettigera aphthosa ..... Lichen.
Sticta pulmonaria ..... Lichen.
Leptogium tremelloides ..... Lichen.
Parmenia physodes ..... Lichen.
Parmelia caperata ..... Lichen.
Parmelia saratitis, var sulcata ..... Lichen.
Cetraria ciliaris ..... Lichen.
Sticta amplissima ..... Lichen.

(No. 48).

Statement as to the disposal of the Revised and Sessional Statutes for the year 1894. Presented to the Legislature, 7th March, 1895. (*Not printed*).

(No. 49).

Report of the Inspector of the House of Industry and Refuge, County of Elgin, for the year 1894. Presented to the Legislature, 11th March, 1895. (*Not printed*).

(No. 50).

Detailed Statement of all Bonds and Securities recorded in the Provincial Registrar's Office since the last Return submitted to the Legislative Assembly, made in accordance with the provisions of R. S. O. chap. 15, sec. 23. Presented to the Legislature, 11th March, 1895. *(Not printed).*

RETURN

To an Order of the House dated 11th March, 1895, for copies of all correspondence up to that date between the Minister of Education, or any member of the Government, and the authorities, or any of them, of University College relating to the matter at issue between the students and authorities of the College.

By Command,

J. M. GIBSON,
Secretary.

Provincial Secretary's Office,
12th March, 1895.

Mr. Whitney.

To His Honor the Lieutenant-Governor in Council, Visitor of the University of Toronto and of University College.

May it Please Your Honor to hear the petition of the undersigned students of the University of Toronto showing that:—

1. A feeling of the gravest dissatisfaction with the present mode of administration of University matters in many things pertaining to the relationship of the students to the Faculty and Councils is generally prevalent among the students.

2. While the present trouble may have arisen between the University Council and the Political Science Club over its programme, there have been numerous cases of friction. And we feel that the attempt of the Council to suppress the *Varsity* is due in large measure to the action of that journal in offering criticism on various departments of study in the University and the College.

3. The criticism referred to was not the result of momentary irritation but was forced upon the *Varsity* as the organ of student opinion, in consequence of inefficient teaching in several departments extending over longer or shorter periods and was offered when we earnestly believed that further forbearance could only result in serious injury to the national University.

And we pray that Your Honor may cause to be instituted a Commission for the purpose of enquiring into the complaint in question.

And your petitioners will ever pray.

Signed by 441 students.

Toronto, 12th February, 1895.

Sir,—The Executive Council has had under consideration to-day your letter to the *Globe* of Saturday, and will hear you at the meeting of the Council to-morrow, Wednesday, at three o'clock in the Council Chamber, in case you may desire to make any observations for their consideration in connection with the letter. Otherwise the Government feel constrained to call on you for your resignation as an Associate Professor in University College.

I have the honor to be, Sir,
Your obedient servant,

(Sgd.) G. W. ROSS.

William Dale, Esq.,
University College.

THE DEAN'S HOUSE, UNIVERSITY COLLEGE,
12th February, 1895.

The Hon. G. W. Ross,
Minister of Education.

DEAR SIR,—I have the honor to state that I shall attend the meeting of the Executive Council to-morrow at 3 o'clock, in accordance with your request in your communication to-day.

I have the honor to be, Sir,
Your obedient servant,

(Sgd.) WILLIAM DALE.

UNIVERSITY COLLEGE,
TORONTO, February 13th, 1895.

MY DEAR DR. ROSS,—I beg leave to call your attention to a letter by Professor Dale of University College which appeared in the *Globe* of the 9th inst., referring to University matters. Without expressing any opinion as to what may be considered legitimate criticism by members of the Faculty, I may say that several courses were open to Mr. Dale by which consideration might be given to any complaints he might have to make with regard to the matters touched on in his letter. First, it was open to him to make complaint to me as President; secondly, he might have made charges in the Senate with regard to the teaching and efficiency of members of the staff, seeing that the Senate is empowered by the Act to enquire into such matters; thirdly, he might have made complaint directly to the Lieutenant-Governor in Council. I may say that until the appearance of his letter I had had no intimation from him regarding the changes therein made. No enquiry on the part of the Senate has as yet been suggested by Mr. Dale and I have no knowledge that he has made any representations directly to the Government.

Referring in detail to Mr. Dale's letter I beg leave to direct your attention to the following points: Offensive insinuations are made with reference to the conduct of the Chancellor of the University in his official capacity, in connection with the appointment of his son-in-law to a position on the staff. With regard to this matter, I desire to say that although I have for years been intimately associated with Mr. Blake in University business, no reference was ever made to me by him or by any one on his behalf with regard to the appointment of Mr. Wrong, nor was the subject ever suggested by any observation of his, near or remote. You, yourself, are doubtless in a position to judge of the character of the insinuation, as it affects the Government.

Disparaging reference is also made in the letter to the academic services of the late President, Sir Daniel Wilson. The indecency of such an attack and its uncalled for nature must be apparent to everyone.

In referring to the testimonials given to Mr. Wrong by Principal Caven, Principal Sheraton, Chancellor Burwash and Mr. Walker, Mr. Dale uses expressions casting doubt upon the value of these testimonials and throwing out insinuations as to the motives with which they were given. I need hardly say

that it is extremely to be regretted that insinuations should be made by any member of the Faculty calculated to disturb the harmonious relations existing between the Faculty on the one hand and the Federated Colleges and the Board of Trustees on the other.

The extraordinary character of Mr. Dale's letter as a whole and the charges made by him, not only regarding the efficiency of two of his colleagues in particular, but regarding all Professors appointed during the last ten years, have produced a condition of affairs within the University which will interfere most seriously with the working of the Institution. So strong has been the feeling aroused that several members of the Faculty have expressed their determination not to associate with Mr. Dale in the transaction of University business, and the conviction is general among the Professoriate that the effect of this letter will be such as not only to add greatly to the difficulty of maintaining order and discipline among the students, but permanently to impair the usefulness of the University in case Mr. Dale is permitted to continue a member of the staff.

Considering the case in all its bearings, and more especially in its effect upon the administration and discipline of the University, I respectfully request that you will consider whether in the interests of the Institution the services of Mr. Dale as a member of the Faculty should not be dispensed with at once.

Yours faithfully,

(Sgd.) J. LOUDON.

Hon. G. W. Ross, LL.D., M.P.P.,
Minister of Education,
Toronto.

(Copy.)

Education Department,
Toronto, 14th February, 1895

Personal.

My Dear Sir,—Kindly meet me at the Parliament Buildings, Executive Council Chamber, at 4 o'clock this afternoon.

Yours truly,

(Sgd.) G. W. ROSS.

William Dale, Esq., M.A.,
University Residence,
Toronto.

University College,
Toronto, February 15th, 1895.

My Dear Dr. Ross,—I beg leave to inform you that this morning I sent for Mr. F. B. R. Hellems, Fellow in Latin in University College, and, in the presence of Prof. Hutton, stated to him that it had been reported to me that he had been inciting under-graduates to attack Prof. Mavor and others of the Faculty. I added that of course I could not say whether there was any truth in the reports

or not, but that I wished to suggest to him to be careful in future to abstain from any such incitement of students against a member of the staff. To my amazement, Mr. Hellems not only acknowledged that there was good foundation for the rumor in question, but stated that so strongly did he feel, especially in the matter of Prof. Mavor, that he could not undertake to abstain from expressing his opinions to the under-graduates. Both Prof. Hutton and myself tried to make Mr. Hellems understand that, whilst he was free to entertain any hostile opinions he pleased with regard to his colleagues, he was not at liberty to communicate such opinions to the under-graduates. I regret to say that all the arguments and representations of Prof. Hutton and myself were of no avail, as Mr. Hellems finally said that he would rather resign than follow in future the course we suggested to him.

This afternoon Mr. Hellems handed in his resignation to the Registrar and I now enclose it to you.

Yours faithfully,

(Sgd.) J. LOUDON.

Hon. G. W. Ross, LL.D., M.P.P.,
Minister of Education,
Toronto.

The Dean's House, University College,
February 15th, 1895.

Dear Sir,—I beg respectfully to tender my resignation of the Fellowship in Latin in University College. Under the circumstances connected with Prof. Dale's dismissal, it would be impossible for me to retain the Fellowship and discharge the duties therewith connected.

Respectfully yours,

(Sgd.) FRED. B. R. HELLEMS.

J. Brebner, B.A.,
Registrar, Univ. Coll.

(Copy.)

Education Department,
Toronto, 15th February, 1895.

My Dear President Loudon,—Mr. Wm. Dale, M.A., Associate Professor in University College, was relieved from his duties yesterday by order of the Executive Government. Will you kindly make a temporary arrangement for his department in such a way as will best conduce to the interests of the students.

Yours truly,

(Sgd.) GEO. W. ROSS.

President Loudon,
University,
Toronto

EDUCATION DEPARTMENT,
TORONTO, 16th February, 1895.

MY DEAR SIR,—Mr. Wm. Dale, M.A., has been, by order of the Executive Council, relieved of his duties of Associate Professor in University College. Kindly remove his name from the pay list on and after the end of this month.

Yours truly,
(Sgd.) G. W. ROSS.

J. E. BERKELEY SMITH, Esq.,
120 Simcoe Street,
Toronto.

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120 SIMCOE STREET,
TORONTO, February 18th, 1895.

The Hon. G. W. ROSS, LL.D.,
Minister of Education,
Toronto.

MY DEAR SIR,—I beg to acknowledge the receipt of your letter of the 16th inst., notifying me that Mr. William Dale, M.A., has been relieved (by order of the Executive Council) of his duties as Associate Professor in University College, and to remove his name from the pay list on and after the end of the current month.

Yours faithfully,
(Sgd.) J. E. BERKELEY SMITH,
Bursar.

TORONTO, February 19th, 1895.

SIR,—I am directed to acknowledge the receipt of your letter of the 16th instant, covering transmission for the information of the Provincial Secretary, of a copy of two resolutions passed at a meeting of the under-graduates of Toronto University, held on Friday, the 15th inst., the one asking for an investigation into the difficulties said to exist in the University, the other protesting against the dismissal of Prof. Dale, and to inform you that the said resolutions will receive due consideration.

I have the honor to be,
Sir,
Your obedient servant,

(Sgd.) G. E. LUMSDEN,
Assistant Secretary.

W. B. HENDRY, Esq.,
Secretary, *pro tem.*,
University College,
Toronto.

University College,
February 16th, 1895.

Hon. J. M. Gibson,
Provincial Secretary.

Dear Sir,—At a large mass meeting of the under-graduates of Toronto University, held on Friday, February 15th, the following resolutions were carried:

1. That we, the under-graduates in Arts of Toronto University, registered in University College, in mass meeting assembled, hereby individually and collectively pledge ourselves to abstain from attendance at all lectures in University College until a proper investigation be granted by the Provincial Government into the difficulties existing in the University, as set forth in a recent petition to His Honor the Lieutenant-Governor, and other difficulties which are known to exist; and that a copy of this resolution be forwarded to the Provincial Secretary and to the University Council.

Moved by W. L. M. King, seconded by S. H. Greenwood.

2. That we, the students of University College in mass meeting assembled, protest most emphatically against the action of the Government in dismissing Prof. Dale, and respectfully demand his immediate re-instatement to the Faculty.

And that we hereby pledge ourselves to abstain from all lectures in University College until his re-instatement, or until the investigation demanded by the students be granted, and that a copy of this resolution be forwarded to the Provincial Secretary.

Moved by J. H. Brown, seconded by A. R. Gregory.

I have the honor to be,
Sir,
Your most obedient servant,

(Sgd.) W. B. HENDRY,
Secretary, *pro tem.*

University College,
Toronto, February 22nd, 1895.

My Dear Dr. Ross,—In view of all the circumstances of the case, I beg leave to lay before you my formal request that the Government should appoint a Commission with full powers to enquire into the causes which have led to the recent breaches of discipline amongst the students of the University.

Yours faithfully,

J. LOUDON.

Hon. G. W. Ross, M.P.P.,
Minister of Education,
Toronto.

TORONTO, February 22nd, 1895.

SIR,—I have the honor to acknowledge the receipt of your letter of the 20th instant, forwarding, for the information of the Provincial Secretary, copy of a resolution unanimously adopted by the students of the University of Toronto assembled in mass meeting on the afternoon of the 20th instant, and to inform you that the subject of the resolution will receive due consideration.

I have the honor to be,
Sir,
Your obedient servant,

(Sgd.) G. E. LUMSDEN,
Assistant Secretary.

D. B MACDONALD, Esq.,
University College,
Toronto, Ont.

UNIVERSITY COLLEGE,
TORONTO, February 20th, 1895.

The Hon. J. M. GIBSON, Q.C., M.P.P.,
Provincial Secretary,
Toronto.

DEAR SIR,—I beg leave to forward to you the enclosed copy of a resolution unanimously adopted by the students of the University of Toronto assembled in mass meeting this afternoon (February 20th).

On behalf of the students I respectfully ask that you will bring this resolution to the notice of the Provincial Government.

I have the honor, Sir, to be,
Yours respectfully,

(Sgd.) D. B. MACDONALD,
Sec. of Mass Meeting.

Resolved that we, the under-graduates in Arts of the University of Toronto in mass meeting assembled, are of opinion

1st. That, having drawn the attention of His Honor the Lieutenant-Governor in Council as Visitor of the University, to the existence of difficulties in the working of the Institution, and having requested such investigation of the same as he in his wisdom should think proper to cause to be undertaken pursuant to the powers in him vested by the Act respecting the University, we respectfully submit that we have done all that is incumbent upon us as under-graduates to bring about an investigation; and we feel that we ought to decline to place ourselves in the invidious position of accusers and prosecutors of the Faculty or individual members thereof.

2nd. That having since our former petition examined with some care into the constitution of the University and the modes and remedies provided to meet such difficulties as are indicated in our former petition, we beg respectfully to submit to His Honor the Lieutenant-Governor that we desire to leave to the

Senate of the University to recommend such measures as may seem to it to be proper to be made under the powers given it by the 45th section of the Act respecting the University. At the same time we beg respectfully to recall to the attention of His Honor the Lieutenant-Governor in Council that the terms of our petition referred to a feeling of the gravest dissatisfaction with the present mode of administration of University matters, and that it appears by the 76th section that "the president, professors, lecturers, teachers, officers and servants of the College shall be appointed by the Lieutenant-Governor after such examination, enquiry and report as he considers necessary, and shall hold office during his pleasure." We would therefore humbly submit that His Honor should take into his consideration the whole question of the University constitution and of the legislative and administrative changes that might seem advisable to remove the causes of inefficiency.

(Copy.)

EDUCATION DEPT.,
TORONTO, 27th February, 1895.

Personal.

MY DEAR PRESIDENT,—Yours of the 22nd inst. to hand. You will observe by the press reports that we decided to grant a Commission to enquire into the causes which led to the recent breaches of discipline in the University. It is intended to give the Commission full power to enquire into any complaint that may be laid before them for which evidence is offered, whether that complaint refers to the inefficiency of the teachers or the irritation alleged in the petition of the students. I hope the investigation of the difficulty will be so thorough and comprehensive that those who have or think they have a ground of complaint with regard to any matter affecting the usefulness of the University will be satisfied that their complaints have been heard and considered.

Yours truly,

(Sgd.) GEO. W. ROSS.

PRESIDENT LOUDON,
University, Toronto.

REPORT

OF THE

ONTARIO

GAME AND FISH COMMISSIONERS

FOR THE YEAR

1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO.
WARWICK BROS. & RUTTER, PRINTERS, &C., 68 AND 70 FRONT STREET WEST.
1895.

REPORT OF THE ONTARIO GAME AND FISH COMMISSIONERS.

DUNNVILLE, 31st Dec., 1894.

His Honor the Lieutenant-Governor of Ontario :

SIR,—Your Commissioners beg herewith to present their third annual report. Annexed to it will be found the reports of the Wardens, together with other tables and matter which will be found self-explanatory.

In presenting their report your Commissioners are pleased to say that undoubted good continues to result from the establishment of the Commission, as evidenced not only by the increase of game throughout the province but by the respect with which the Game and Fishery Laws are treated by the community at large.

Your Commissioners feel warranted in saying that the wanton slaughter of game and fish has for the most part ceased, although in saying this they do not pretend of course that the Game Laws are never violated, for owing to the enormous extent of area which has to be watched, as well as to the fact that the law applying to settlers and Indians permits game to be taken at all seasons, complaints will always be forthcoming, and it may always be a difficult matter to convince the sceptical that the laws are being properly and vigorously enforced.

Owing to the resignation of Mr. J. H. Willmot, from the Board of Commissioners last year, a vacancy was created which has so far not been filled, and in as much as this leaves the Board incomplete, your Commissioners trust that a new appointment will be made at an early date.

WARDENS.

Your Commissioners have much pleasure in testifying to the continued good work done by the Wardens. These officers have been most active and zealous, and have performed their duties with great care and tact throughout the year. As pointed out in previous years, however, it must be remembered that the area which the wardens have to cover is so vast in its extent that much of it remains unvisited.

Your Commissioners are of opinion that at least two more Wardens should be appointed this year, and are also of opinion that the salaries of Warden Smith and Warden Willmott, upon whom falls the bulk of the work should be increased without delay.

DEPUTY WARDENS.

There are still 445 Deputy Wardens on the roll, but as pointed out in last year's report many of these officers appear to pay no attention whatever to the work expected of them and but few of them ever correspond with the Board or follow up complaints made to them. It must be said in behalf of these officers, however, that they are not paid by salary and receive no remuneration except what they are entitled to in the shape of half the fines accruing from convictions where they are themselves the informants. Under these circumstances your Commissioners find that the Deputy Wardens will not act unless they are sure of securing convictions, and it follows that many offenders who ought to be prosecuted and who would in all likelihood be convicted if tried, are allowed to go free.

Your Commissioners again strongly recommend that the list of Deputy Wardens should be carefully revised and that the Wardens be allowed to pick out one or two good men in each of the counties in their divisions who would report promptly upon all cases brought under their notice. If after careful investigation the Wardens were of opinion that the cases were good ones prosecution might then be entered upon, and in case of failure, the Deputies, who had acted in good faith, could be properly relieved from the responsibility of having to defray the costs consequent upon lost cases.

Your Commissioners are unanimously of the opinion that it would be better in every way to have a few active and intelligent Deputies working under such a system as this, than to have a force nominally strong, but for the most part useless to all intents and purposes.

Game in Ontario.

There can be no doubt that the enforcement of the Game Laws for the past three years has had the effect of increasing game in the province. Much attention has been paid by sportsmen throughout the country to the matter of restocking, and partridge, quail and duck have been unusually abundant. The increase of partridge is almost entirely owing to the observance of the law which prohibits the sale of this bird, and your Commissioners may be permitted to express unanimously the hope that this section of the Act may not be tampered with or amended, although no doubt pressure will be brought upon the Government by senseless epicures and merciless pothunters who care nothing for the preservation of game so long as their own selfish desires can be gratified.

Deer.

Your Commissioners have to report that deer have been abundant during the past season and the influx of hunters greater than ever. There can be no doubt however that the present open season is not only too long but that it begins too early, and as each hunter is only allowed to kill two deer, two weeks should be quite long enough for the open season, and a return should be made to the first two weeks of November as the open season. An enormous quantity of meat was spoiled and wasted last season owing to the early period at which the shooting season commenced, and added to this there can be no excuse for allowing hounds to run for twenty-five days as the present law provides for. Your Commissioners are unfortunately still divided in opinion on the hound question, but if the season is shortened as now recommended to the first two weeks in November which was found to answer admirably in 1893, the harm done by hounding will certainly be minimized. Your Commissioners have had many complaints regarding the unreasonable slaughter of game by Indians, but find it almost impossible to bring home to these people the proof of their evil doing, or to punish them by reason of the special privileges which they enjoy as wards of the Crown.

Insectivorous Birds.

Your Commissioners have to report that since the issue of permits to take insectivorous birds and their eggs for scientific purposes has been intrusted to the Chief Warden the number has been greatly reduced. The issue is now limited strictly to *bona fide* scientists, and Mr. William Brodie, president of the Ontario Biological Society has been kind enough to pass upon all applications. Upon

his recommendation the permits are now given out, and as a result boys, taxidermists, and other persons who have hitherto abused and made improper use of the privilege granted them are precluded from getting the permits which have been too freely given out in the past.

Fisheries.

Your Commissioners regret that the dispute in the matter of the fisheries existing between the Ontario and the Dominion Governments still remains unsettled. Your Commissioners cannot too strongly urge that immediate steps should be taken so as to arrive at a settlement as to the question of jurisdiction. Until this is done your Commissioners are afraid to act, their hands being tied, and the country can ill afford the loss she is suffering at present in the destruction of fish. Beside all this the work of restocking depleted waters is in abeyance until this matter is settled.

Shooting Licenses.

Your Commissioners have to report that 60 shooting licenses have been issued to foreign sportsmen during the year as against 70 in 1893.

Provincial Museum.

Your Commissioners are still of the opinion that in view of the scarcity of many of the game animals which were at one time abundant in the province a collection should be made without delay. A room might be found for such a collection in the Parliament Buildings, and many specimens would undoubtedly be contributed by interested persons outside the Commission.

Chief Warden.

Your Commissioners regret exceedingly that the Government has thought it necessary to ask for the resignation of Mr. A. D. Stewart, who has filled the position of Chief Warden since the inception of the work of the Commission, and desire to take this opportunity of expressing their unqualified satisfaction at the manner in which he has discharged his public duties. To his executive ability is due, in a great measure, the organization of the work of the Commission and he leaves the service with the best wishes of this Board.

It will be necessary of course to fill Mr. Stewart's position without delay and your Commissioners beg to recommend that Mr. H. K. Smith, Warden in charge of the eastern portion of the province be appointed as Mr. Stewart's successor. Mr. Smith is a man of considerable executive ability, is thoroughly familiar with the workings of the Game and Fishery Acts and can be depended upon for careful, intelligent and conscientious work.

Foxes.

Your Commissioners are of opinion that a bounty of 50 cents per head should be paid for foxes destroyed in the province These vermin are very destructive not only to game birds but also to domestic fowls and insectivorous birds, and their extermination would be a distinct benefit to the agriculturist and fruit grower.

Foreign Sportsmen.

Your Commissioners recommend that in future foreign sportsmen who have paid for and taken out shooting licenses should be allowed to take out of the province with them the two deer which the law allows them to kill. This appears to your Commissioners to be a fair proposition and if carried into effect it would no doubt result in a largely increased revenue from the sale of shooting licenses.

Deputy Wardens.

Your Commissioners recommend that the Deputy Wardens be made constables under the Act so as to allow them to serve their own summonses, subpoenas, and other court papers without having to resort to the expense of employing county constables and thereby increasing the amount of their liability in cases which result in failure.

General Shooting.

Your Commissioners recommend that sub. sec. 2 of sec. 4 of the Game Act be amended by taking out the words "half an hour" in the second and third lines thereof.

All of which is respectfully submitted.

G. A. McCALLUM,
Chairman Ontario Game and Fish Commission.

REPORT OF CHIEF WARDEN.

HAMILTON, December, 1894.

G. A. McCALLUM, Esq,, M.D.,
Chairman of Game and Fish Commission.

SIR,—I beg to submit a summary of the work of the Department for the season of 1894.

I can safely say that the Game Laws have been well enforced during the year, and no complaint has reached me which has not been promptly followed up and dealt with. The amount of correspondence which has poured in upon me during the year has been as large as ever and shows how deep an interest is taken throughout the Province in matters connected with the Game and Fish Commission.

Attached to this report will be found the usual tables and reports which I trust will be found interesting and useful.

WARDENS.

I am glad to be able to say that the duties of the four Wardens have been performed during the season in a most satisfactory manner, and I take this opportunity of thanking these gentlemen for the valuable assistance which they have rendered me. The province still continues to be mapped out into five districts one of which I have endeavored to attend to myself whilst the Wardens looked after the other four. This system has, after a year's trial, been found to work well except for the fact that the districts are so large in area as to render it quite impossible for one man to satisfactorily oversee them. The real remedy for this would be to appoint two more Wardens so that the districts can be redivided and the money spent for the salaries of the two additional officers would be well spent.

DEPUTY WARDENS.

As against 413 deputies who held office last year there are 445 now on the rolls. I again beg to point out that the system under which these Officers are appointed is not satisfactory. For reasons which are obvious and which I have pointed out more than once in my previous reports, no Deputy Warden can be expected to do his duty fully and zealously whilst the fear is ever hanging over his head that he may be mulcted in costs owing to the prosecution of the cases which he may enter upon in good faith and which may appear to him to warrant prosecution. As a matter of fact whilst a large paper force of Deputies exists, but few of these officers attempt to do any work, and as long as the present system continues, no improvement can be expected, nor will the laws ever be as fully and efficiently enforced as they should be. I have again to recommend that the list of Deputy Wardens be revised, and that the Wardens in charge of the various official districts be empowered to appoint one or two reliable Deputies in each county whose expenses should be paid in the event of failure to convict in cases which may be taken into court. When such a system as this is entered upon, good and intelligent work may be expected, but under the present method the work will always be spasmodic, and can never possibly be satisfactory.

Game Laws.

Referring to the Game Laws I am satisfied that they continue to be popular and that they receive the general support of all right thinking people throughout the province. As a result of their enforcement, game of all sorts has been more plentiful and the Commissioners can congratulate themselves on the present state of affairs.

Game in Ontario.

The severity of last winter killed off many of the quail, but thanks to the work of restocking which has been carried on with no unsparing hand this valuable game bird is still to be found in considerable numbers. Partridge has been plentiful and the same can be said of ducks, geese, and swan. The supply of deer keeps about the same as in former years but there is no doubt that a very grave mistake has been made in allowing the open season to commence so early and last so long. Large quantities of venison were destroyed during the past season owing to the warm weather and I very strongly recommend a return forthwith to the season set by the Government in 1892, viz. from 1st to 15th November, both days inclusive. I have had many complaints during the year regarding the killing of deer by Indians, but as long as these people are Government wards and live in such remote districts as to render detection impossible little can be done to amend the present state of affairs.

Insectivorous Birds.

I issued last year 61 permits to take insectivorous birds and their eggs for scientific purposes. In no case was any permit issued, unless the applicant was personally known to me, except upon the recommendation of some well known naturalist who could vouch for the *bona fides* of the persons applying, and I think I can safely say that the permits issued during the year have not been abused. In former years a large percentage of the permit holders was composed of boys and taxidermists and frequent complaint was made that the holders had taken advantage of their opportuntities to openly violate the Game Laws. Under the present arrangement a stop has been put to this evil and only those who deserve them are allowed the privileges in question.

Fish.

I regret to say that the dispute in the matter of the fisheries which exists between the Ontario and the Dominion Governments still continues. This being the case, little or nothing has been done by our Officers to administer the Fishery Laws. Nearly three years have slipped away since the question of a test case to settle the present difficulty was spoken of, and meantime the slaughter of fish and the destruction of their ova goes steadily on and the country is imperceptibly but surely suffering. I again beg to point out that there is nothing in the Fisheries' Act to prohibit the illegal sale of fish during the close season "no matter where killed or procured" and for want of this neccessary clause the law is openly violated.

Shooting Licenses.

I have to report that as against 70 licenses insued in 1893 we have this year issued 60, making at $25 each per license a total revenue of $1,500. A list of persons to whom these licenses were issued will be found annexed to this report.

Resignation of Chief Warden.

Having been notified lately by the Provincial Secretary that the Government desired my resignation as Chief Game Warden and Secretary of the Commission I have forwarded my resignation in due course. It has been thought advisable that the office of the Chief Warden should be located in Toronto and that that Officer should give his entire time to the work of the Commission. There is much force in this contention and doubtless the work will be better overtaken under the new conditions, but I could not possibly in justice to myself, overtake to give up my whole time for the small salary heretofore paid. In retiring from the work of the Commission which I have endeavored to carry out to the best of my ability I desire to thank the Provincial Secretary and the Chairman and members of the Fish and Game Commission for their uniform courtesy and consideration. Under their direction much good work has been done and I trust that my successor in office will receive the same measure of support as has ever been accorded to me.

I am, sir,
Your obedient servant.

A. D. STEWART,
Chief Warden.

BELLEVILLE, Ont., 31st December, 1894.

A. D. STEWART, ESQ.,
Chief Warden.

DEAR SIR,—In submitting this my third annual report, I have to congratulate you and the Commissioners on the continued success attending the efforts which have been made for the protection of the game and fur-bearing animals of the province.

It is asserted on all hands that deer have been numerous in nearly all the localities usually frequented by them and the assertion seems to be warranted, when we consider the large number that have been taken during the late hunting season.

It is a matter of regret, however, that large quantities of the venison was rendered unfit for food on account of its having been killed in the early season, when the weather was too warm; sportsman are to be censured for continuing the killing, knowing that it was impossible to save the meat, and to prevent a recurrence of this, I consider it imperative that a change be made in the open season, and strongly recommend that the hunting season should not open until the first of November. The first fifteen days of November will be found (taking one year with another) as nearly right as it is possible to make it.

I have now to direct your attention to a matter upon which I have greatly changed my opinion of late, that is the hounding of deer. As you are aware I have always favored the use of hounds, but I have to confess that unless some restrictions can be placed on the number that may be taken into the woods, it would be better to prohibit hounding altogether. As many of the hunting parties take in packs of hounds, numbering from twelve to fifteen, and run three and four chases at the same time, it will be readily seen that sportsmen are carrying this to extremes, which must lead to the suppression of the hounds in the end.

Ducks have been quite numerous, and those who follow this branch of sport were fairly successful, but the means used by many of the duck hunters are very questionable and deserve serious consideration. I allude particularly to the pursuit of fall ducks with floating blinds, sunken punts, batteries, monitors and masked boats of various kinds. These are known by different names in different localities, and as no authoritative description or definition of them can be had, it is impossible to obtain a conviction against the parties using them, and I have to recommend therefore that the law be amended so that hunters will be compelled to build their blinds on points of islands, shore or in rush beds. If this were the law, the use of all these doubtful contrivances would be illegal and every hunter would then be on an equality, and the slaughter of the ducks in open water by means of these illegal devices could then be successfully prosecuted. On the whole the law has been generally well observed, with the exception, perhaps, of a few cases of spring shooting in a certain locality, where I obtained a number of convictions, which will effectually put a stop to it in the future.

With regard to shooting for the half hour before sunrise and after sunset, the clause permitting this, especially after sunset is a source of trouble; hunters take advantage of this and shoot until dark and sometimes well into the night, and as after dark it is impossible to identify them, the law in this respect cannot be enforced. A return to the Act of 1892, which permitted shooting between sunrise and sunset only, would, in my opinion, be a move in the right direction.

The law regarding the sale of partridge is still giving general satisfaction and there is no doubt these birds are steadily increasing in numbers.

Notwithstanding the satisfaction the Game Laws are giving to the general public, violations are of frequent occurrence and as a certain class of offenders become more adept at evading the law, convictions are more difficult to obtain than formerly, and the result is, that now the Warden has generally to take charge of the cases and assume the responsibility of the prosecution, necessitating, as a matter of course, largely increased travelling expenses.

I am, Sir,
Your obedient servant,

H. K. SMITH,
Warden.

BEAUMARIS, 31st Dec., 1894.

A. D. STEWART, ESQ.,
Chief Warden.

SIR,—I have the honor of submitting to you my annual report in connection with the Game and Fish for the section over which I have the supervision as Warden.

Deer and Moose.

Deer have been plentiful in most places frequented by hunters this fall and it is most gratfying to hear, with very few exceptions, that they have greatly increased in numbers during the past few years. There is no doubt the new Game Laws have caused this increase. Moose are also reported on the increase. I may mention that recently I passed through a portion of the Parry Sound district, and in one place for ten or fifteen miles the road and bush on each side were literally padded down with deer tracks; also with occasional moose tracks. The slaughter of deer this fall by hunters has been terrific, and I think that in the future it will be necessary to put some parties under oath as to the number killed by them, as in many cases the entire lawful number are taken out by a party, and it stands to reason that more have been killed for use in camp.

Owing to the very mild weather which prevailed at the commencement of the hunting season, hundreds of carcasses of deer went bad; this was also the case in 1893. I would therefore strongly urge that the open season be put back to that of 1892, *i.e.*, from 1st to 15th of November, and allow hounds to run part of the season only.

The settlers as a rule are up in arms against so many hounds being brought into the country. In some cases I have known of from ten to fourteen dogs having been brought in by one party. I would therefore recommend a limitation of hounds —say to four for any one party.

As the close season for Moose expires this year, it will be most necessary to use means to prevent their slaughter in numbers next season. I would recommend that no person be allowed to kill more than one, and if practicable, prohibit the slaughter of cows.

Partridges.

Partridges are plentiful in the northern portions of the province, but do not appear to be increasing as rapidly as we would wish in the older settled portions of the country.

Wolves.

Wolves are numerous in certain localities. I have seen several hunters who intend going in for the poisoning of these pests. There is no doubt that one wolf does more slaughter among the deer in one year than many hunters combined.

Deputy Wardens.

I am glad to say that we have some good Deputies on our lists, but the majority do not seem to take any interest in the performance of the duties for which they were appointed.

Fishery Laws.

The Fishery laws are fairly observed, but to gain a satisfactory end it would be highly advantageous to have the question of jurisdiction at present at issue, between the Dominion and Provincial Governments, settled. Many nets have been confiscated and several prosecutions for infractions have taken place.

The public as a rule seem totally ignorant of some of the amendments to the Game Act, which have been made since 1892. I would therefore strongly urge that the "posters" which were sent to the post offices, railway stations, etc., in 1892 be recalled, or their destruction ordered, as they are in many instances most misleading, and new ones, embracing the law as it now stands, issued to take their place; as an instance, I have come across several parties with rat skins who where totally ignorant of the change of the close season and who under the circumstances it would have been a gross injustice to prosecute. It is also most necessary that the Deputy Wardens be provided with copies of the Act as it now stands, and the Wardens should have on hand a number of spare copies for distribution, as there are numerous applications for them.

During the hunting season I arranged with Robert Rush, Sault Ste Marie; John I. Little, Iron Bridge, Algoma; A. J. Greer, Parry Sound; W. Foreman, Port Carling; to act as special patrols, with results highly satisfactory.

I am, Sir,
Your obedient servant,

JOHN H. WILLMOTT,
Warden.

LEAMINGTON, Dec. 31st, 1894.

A. D. STEWART, ESQ.,
Chief Warden,
Hamilton.

SIR,—I have the honor of submitting to you my annual report for the year 1894. I continue to hold the Wardenship over some very important counties, and oversee a very difficult district, on account of International lines between Canada and the United States from Amherstburg to Sarnia, commencing at the mouth of Lake Erie to the mouth of Lake Huron.

My presence is required at least two-thirds of a year in order to enforce the laws, and satisfy the different clubs along the lines. As letters of complaint are of a frequent occurence, it may not come amiss to draw your kind attention to my report of 1892, regards protecting the frontiers, and how to prevent the evil of proaching.

Deer of the Western District.

I sent you some time ago a newspaper clipping taken from *The Windsor Record*, regarding unlawful deer hunting, between Camp Palmer and Colchester South, county of Essex. I received also a great deal of information from sportsmen and citizens who want the Game Laws enforced in regard to deer. After a careful investigation I must confess that things are worse than I have seen them in print. I have secured the name of some of the violaters for the year of 1893, but, of course, the time is past in which to prosecute them, and also the names of those whose intention it is to kill deer as soon as snow comes. Two of these men killed from nine to eleven deer out of season last year, and boast of it. Some of these proachers are well-to-do farmers and live in the vicinity of the deer grounds. I shall take every precaution and do my best to stop this slaughter and bring the violaters to justice. The Deputy Warden, Anthony Banks, of Harrow, has been notified and is acquainted with all the facts as he took a trip with me throughout the township of Colchester, and will give it his strict attention, and I shall do all I can to assist him myself.

The people of the western district, comprising Lambton, Essex and Kent, are nearly all of one mind as to prohibiting the hounding of deer, and desire that no more be killed for at least five years, as our woods are not large enough to afford protection against hounds, and strong efforts will be made to that effect at the meeting of next Parliament. From the best sources of information, I fancy there still remain from fifteen to twenty deer within the borders of Essex county, and but for the vigilance of Mr. Walker and his caretaker there would be no deer to protect.

Swan and Geese.

That the Game and Fish Laws are doing good in spite of the poaching can be seen in many localities. I do not think that there is a better place for geese and swan shooting in spring than between the St. Clair Flats and Mitchell's Bay, Last spring I had the pleasure of proving it to my own satisfaction; geese and swan could be seen by hundreds on the Canada side of the marsh, and apparently quite tame, as a good marksman with a rifle could easily obtain some of them from the steamboat that I was sailing on, and strange to say on the American side of the marsh no birds could be seen although they have good feeding grounds. The reason given by Americans is that our laws are better and our Game Wardens attend to their duties, and that the American Wardens along the frontier seldom visit their district unless sent for, but stay at home and are excellent men to draw their salaries.

Wild Turkey in Kent County.

I have referred in my former reports, to the sportsmen of Kent county, whose example is worthy of emulation by true sportsmen for the way they protect their game. Their influence has borne good fruit, as the wild turkey is on the increase—two large flocks are staying between the Windfall and Romney Ridge and are well looked after by the citizens of that locality, who are friendly to our present Game Laws; no complaints have been made this year from that part of the district.

Wild Duck.

I have not visited Rondeau this year as you have appointed Mr. Gardiner to look after it and from all accounts he has done his duty well. The harm done to duck shooting in many places is well known to you and is only a repetition of last year. The electric yacht, steam yacht, and shooting by moonlight goes on and it is impossible to enforce the laws on the water as they ought to be, without a suitable craft and you must bear with me if complaints are received against me until this is remedied. I have talked with the members of the Anderdon Gun Club, Canada Marsh (who are Americans) regarding the damage done to duck shooting by these boats and I cannot do better, than give you the opinion expressed by one of the best law abiding citizens, Thos. Beath, of Detroit, member of the Anderdon Club.

Punting for Ducks' Eggs.

"There is another thing that should be stopped, and stopped right off," said Joe Bowers, who lives at the head of Lake St. Clair to Game Warden Campbell the other day. That is the pilfering of the nests of the ducks in the marshes. Every morning just about daylight you will see men, women and boys going into the marshes around here hunting for duck's eggs. Barrel after barrel of these eggs are shipped to Detroit and other ports from this locality. Now, these eggs represent just so many ducks and I think that their sale should be prohibited for at least ten years, to give the ducks a chance to propagate and increase in number."

This plea is shared in by all true lovers of the sport of legitimate duck hunting.

"I tell you what," said Tom Beath, one of the directors of the Anderdon Shooting Club on the Canada side, "ducks are cunning birds." While mallards and wood duck still continue to inhabit the marsh feeding grounds, red heads, the most valuable species of the duck family, go out into the middle ground of the river or shallow spots in the lakes where they can have a full view of all their surroundings.

Not Afraid of the Shipping.

These birds have become familiar with the noise and bustle of the regular shipping, and hardly ever fly at the approach of propellers or steamers. The owners of small, fast steam yachts know this, and as their crafts draw but a few feet of water, they sneak up on the red heads. Then putting on a full head of steam they rush down upon them. Before the ducks have time to rise and shake themselves the yacht is upon them. Then a regular fusilade is poured into the unsuspecting water fowl. Those uninjured make for the lake, but are remorselessly pursued by the steam bloodhounds far into the open water. This kind of thing, said Mr. Beath, "has caused the red heads to become scarcer and scarcer every year, and those that do come down from the north never stay more than

two or three days until they are driven from our lakes and rivers to Chesapeake Bay and the Virginia feeding grounds. Before the introduction of these murderous devices, red heads were plentiful for a month, and the old-time sportsmen could go out in the morning and come home at night with a well-filled bag and full of vigor after a healthful, legitimate day's sport. But now continued Tom, with a sigh, "I have known good shots and men who used to pride themselves on their knowledge of hunting to put in a whole day in the marshes or on the river and lake, and come home with nothing but a hungry and disgusted look."

Spring Shooting.

"Spring shooting is murder in its worst form," said Walter Schweikart, who is a noted sportsman, and is known by almost every hunter on the chain of lakes. "I will explain," said he. "You see in the spring the female duck lays her eggs. Well, every female bird killed or injured means just so many less ducks the coming fall season. If the Legislature will only abolish spring shooting for five years the ducks would multiply in such numbers as to provide enough to supply the markets of the country for a generation. That is, you know, if they will only carry out the law against the slaughtering machines." The genial captain smiled at his own suggestion.

The sentiments of the well-known sportsmen given above are really the sentiments of at least nine-tenths of the old gunners of the State, and as their opinions are logical, no fair-minded man can wish them anything but success in their efforts to preserve the game of the Wolverine State.

(Sgd.) THOMAS BEATH.

Deputy Game Wardens.

The opinion given by you as Chief Game Warden, that each Warden should at least appoint some of the Deputies in his districts must meet with approval as each Warden is apt to find out the fitness of the man who is applicant for the position in general. I have been very fortunate with my Deputies at least with those I have come in contact and believe that they to do the best they can under present circumstances.

Quail in Essex County.

Before closing my report, I should, at least, mention to you the credit that is due to the members of the "Leamington Gun Club" for their enterprise in helping to propagate our game birds. Last spring they imported from seventeen to nineteen dozen quail from the State of Kansas at the expense of seventy-five dollars which were successfully distributed through the township of Mersea (Essex Co.) under the management of Capt. Conover and Mr. H. Milkins, of Leamington. All these birds arrived in good condition, excepting eight which died from the long journey, and more will be imported this spring as soon as the weather is favorable, so they may do for themselves, without danger of starving.

It is generally admitted that quail are increasing in some parts where there is plenty of cover as the farmers generally protect the birds and feed them in winter. Owing to the loss sustained two winters ago almost all our quail perished from severe weather and many a bevy of dead birds was discovered after the snow drifts disappeared, but the lookout this winter is very promising. I saw with my own eyes a few weeks ago three large bevy of quail in the south woods, along the border of Pelee marsh and Hillman creek. These are well cared for and looked after by our Deputy Game Warden, Mr. Jonas Hillman, and as foxes are becoming more scarce in the marsh I hope for plenty of quail next season.

Fishery Question.

It is to be hoped that the Supreme Court will soon decide, and settle the much talked of question, regarding the rights of Ontario to control the inland fisheries, and that it will be satisfactory for all time to come, as the present situation is very embarrassing for local officers, as all prosecution must be made under the Dominion Fisheries' Laws, and disputes cannot be avoided where there are two sets of officers looking after the same interest I am informed by Mr. Parker, of the "Sandwich Fish Hatchery," that whitefish are on the increase in the Detroit river, and that he had secured all spawn required for the hatchery in a few weeks, long before any ice was in the river.

I hope that the day is not far distant that our Fishery Laws will be changed according to the laws of natural circumstance and that the fisherman will reap the benefit of his labor.

I am, Sir,

Your obedient servant,

F. C. Quallins,
Warden.

December 31st, 1894.

A. D. Stewart, Esq.,
Chief Warden.

Sir,—I beg to submit my third annual report for the year 1894.

The observance of the Game Laws, in this district, has been very satisfactory; all kinds of small game being undoubtedly on the increase. An unusually large number of ducks have remained on the breeding grounds, many broods of young being the result. Plover were also very numerous during the season.

The Grand river is fast becoming a popular summer resort for sportsmen, who enjoy fishing and shooting.

Acting upon instructions received from you, I carefully investigated the complaints sent in to you from Bradford, Long Point, Turkey Point and Oakville, the result of which I reported to you in detail at the time.

The great drawback that I find in prosecuting cases reported to me from a distance, is the neglect of the complainants to secure direct and conclusive evidence, but the fact that such cases are investigated creates a good impression, and shows that the interests of the Game Act are being looked after. The American poaching from steam yachts and small tugs still continues to be very troublesome along Lake Erie and the Niagara river in my district. Complaints have frequently been made to me by prominent citizens and Deputy Wardens; several Justices of the Peace have also asked me if we could not stop the practice; and some of them have made complaints to you on the matter as you are aware.

We have had several breaches of the Act here in respect to the trapping of fur animals out of season, and when summoned to answer the charge the defendants invariably pleaded ignorance of the law, and thus tried to create sympathy by contending that I should have posted bills in every school section notifying the public of every change in the Game Laws. The real facts showed the folly of this contention, for as your Honor, who disposed of the cases knows, the furs when produced in your court were already cured and thoroughly dried, thus proving that they had all been trapped in September and October, which months are within the close season of both the old laws and the revised Act; and while it may be well that you imposed only nominal fines, the real facts would have warranted more severe sentences in all but one or two of the cases.

The work done by me during the year remains very similar to that already reported to you in my former reports, and need not, I think, be again repeated here in detail.

On the 15th October I received a letter from you ordering me to proceed to Muskoka and meet Warden Willmott at Beaumaris, and arrange with him as to the best method of enforcing the Game Laws during the shooting season for deer in his district. I at once did so, meeting Mr. Willmott at Beaumaris on October 18th.

We arranged together that I should interview as many of the hunting parties as possible north of Muskoka lake to a point extending from Huntsville to Trout river twenty miles north of Dorset, including a chain of lakes, along which many hunting parties were daily arriving. These parties I found upon strict inquiry, consisted entirely of Canadian sportsmen, excepting one man, in a party east of Point lake, and he held a license.

The number of hunters along this route numbered about 79 men and 23 dogs.

Two other parties I could not reach through lack of a boat, but I ascertained that there were about 20 men and 6 or 8 dogs.

When I returned to Huntsville I could not hear of any foreigners having come in for the purpose of hunting; so I proceeded north to Emsdale, in the vicinity of which several parties were camping, but found that they were all Canadians from different points in Ontario.

I also visited several other points south of Lake Nipissing along the Magnetawan river to Seguin, but found only Canadians accompanied by hosts of dogs. From Seguin to Rosseau I saw two hunting parties from Toronto; found all right.

Saw a white deer which had been captured on the head of Lake Rosseau by a resident and his sons, but which he would not sell at any reasonable price. There were a great many hunting parties operating around here, but I could find nothing wrong. I returned by Lake Rosseau and Lake Joseph to Beaumaris, and there meeting Mr. Willmott we took a skiff and rowed across the lake to Bala, where four or five hunting parties came for supplies, but finding all right we proceeded down the Muskoka river to a point where we portaged across to the Moon river. Rowing about nine miles down we came to the camp of an American hunter who held a license and who kindly invited us to partake of a portion of his venison and other good things, and allowed us to share his tent and blankets with him during the night.

This gentleman had shot two deer, and his guide one, and they were trying to capture a bear. This done he would strike for his home in Ohio satisfied that he had got more than twenty-five dollars' worth of sport out of his license. Next morning after breakfast, it being the Lord's day we were invited to be seated while our host read a chapter from the Bible, concluding with a short religious service from his prayer book. We then prepared to depart, bidding our host a friendly adieu.

We also inspected a camp of hunters from Niagara, which we were informed contained two foreigners, but as we could not decide the matter at the time, I, on my return, caused further enquiries to be made at Niagara, and ascertained that they were Canadians.

There were a great many hunters in the southern portions of Muskoka and Parry Sound, who were all being looked after by Warden Willmott and his deputies.

We could not find any foreigners without license, nor any that had taken more than two deer, the majority not getting more than one, and some none at all.

I should judge that there must have been fully eight hundred persons shooting deer in Muskoka this fall with at least three hundred dogs brought by persons coming from other parts of Ontario, and supplemented by one hundred and fifty more owned and used by the residents of Muskoka at this season.

I think the number of both men and dogs here given, quite below the mark. I think the number should be confined to one dog for each hunter or party of hunters, or better still, entirely prohibited.

The open season should also be changed to a later date if possible, the weather in October being generally too warm to allow of the deer being kept fresh long enough to get them to the shipping points.

Fully two-thirds of all the deer shot that I saw had become more or less tainted or spoiled. In fact many carcasses were left in the camps or thrown away, whilst others were buried or burned on the camp fire. I would recommend that the open season be shortened to ten days.

Some radical change is necessary if this beautiful game is to be preserved. The number of hunters of all kinds is very rapidly increasing each year; all reports in the game district bear out this fact.

Whilst in Muskoka I noticed grouse in abundance and many of the fur-bearing animals. Hares were plentiful, but ducks rather scarce.

On my return home I found the train crowded with returning sportsmen, including dogs and catch of game. The stench arising from the carcasses was almost unbearable. I talked with all the parties on the train and counted the deer claimed by each, and found all well.

I also easily saw the reason why the foreign poacher has little chance to succeed in Muskoka: added to twenty-five dollars' license, is the jealousy manifested by the majority of the people for the success of the Game Laws and the preservation of their beautiful hunting facilities as long as possible, which this district undoubtedly possesses.

I am, sir, your obedient servant,

J. A. GILL,
Warden.

SHOOTING LICENSES ISSUED TO FOREIGN SPORTSMEN, 1894.

George H. Lothrop	Detroit, Mich.
James G. Averell	Ogdensburg, N. Y.
James W. Collins	Alleghany, Pa.
James W. Grove	" "
James McAfie	" "
Samuel H. McAfie	" "
Ulysses Baird	" "
Chas. M. Voight	" "
Alex. M. Voight	" "
J. J. M. Davidson	" "
D. W. McMaugher	" "
John S. McIntosh	" "
John H. Grove	" "
P. J. McCance	" "
James Graham	" "
W. J. Riggs	" "
D. H. McMillian	Buffalo, N. Y.
Walter Lauder	New York, N. Y
Arthur Milinouski	Buffalo, N. Y.
Samuel C. Gill	Steubenville, N. Y.
Henry Griffin	New York, N. Y.
C. J. Hudson	Alexandria Bay, N. Y.
L. D. Smalley	Boston, Mass.
J. L. Rhoades	Lockport, N. Y.
Albert Douglas	Chelicotte, Ohio.
W. H. Nichols	New York, N. Y.
Howell Osborne	New York, N. Y.
G. N. Smalley	Boston, Mass.
James B. McKay	Detroit, Mich.
C. B. Hubbard	Detroit, Mich.
Donald McLean	Detroit, Mich.
Gus Bumleur	Wyandotte, Mich.
John Parker	Detroit, Mich.
Samuel Baugh	Detroit, Mich.
E. H. Nelson	Detroit, Mich.
Augustus Heminway	Boston, Mass.
Arthur Cabot	Boston, Mass.
Henry Sampson	New York, N. Y.
C. Higley	Cleveland, Ohio.
John Stanley	Cleveland, Ohio.
H. R. Sweney	Albany, N. Y.
J. S. Thompson	Tonawanda, N. Y.
Wm. Gombert	Tonawanda, N. Y.
J. H. Clarke	Halifax, N. S.
W. B. Dickerman	New York, N. Y.
G. H. Richards	Boston, Mass.
Lawrence Curtis	Boston, Mass.
George N. Williams, jr	New York, N. Y.
Horatio Hathaway	New Bedford, Mass.

W. G. Dominick	New York, N. Y.
F. H. Walker	Detroit, Mich.
John T. Lord	London, Eng.
Jay C. Smith	New York, N. Y.
A. E. Brush	Detroit, Mich.
George Holden	New York, N. Y.
Joseph Bedore	St. Clair Flats, Mich.
Mariner M. Staunton	Detroit, Mich.
Thomas Beath	Detroit, Mich.
William P. Hutchins	Detroit, Mich.
Payson Hutchins	Detroit, Mich.

List of Deputy Wardens by Counties, 1894.

Algoma.

Anderson, Alexander	Pearl River, C. P. R.
Brown, Frank	Port Arthur.
Bole, Duncan	Sault Ste. Marie.
Black, Andrew	Richard Landing.
Cosgrove, Geo. (care of Hugh Munro)	Port Arthur.
Emmons, John	Rat Portage.
Fraser, D	"
Geddes, Thos. R	Jack Fish Bay.
Gilmour, Wm	Sault Ste. Marie.
Gardiner, J	Rat Portage.
Harris, John	Sault Ste. Marie.
Higgins, Wm	Thessalon.
Little, J. T	Iron Bridge.
McKewen, S. R	Tehkummah.
McKirdy, William	Nepigon.
Piche, John	Sudbury.
Patterson, M. J	Webbwood.
Riley, Edward	Port Arthur.
Rush, Robert	Sault Ste. Marie.
Reid, W. D	Thompson.
Smith, Alfred Bird	Schreiber.
Whalen, Joseph	Port Arthur.
Woods, J. M	Thessalon.

Addington.

Donaldson, William J	Donaldson's Mills.

Bruce.

Armstrong, Joseph	Kinloss.
Barley, Edward	Lion's Head.
Farquharson, John	Teeswater.
Gardiner, Jno. H	Lucknow.
Grey, Wesley	Chesley.
Henry, George	Port Elgin.
Henderson, James	Kincardine.
Heffernan, Patrick	Walkerton.
Hogg, Wm. W	Paisley.
Lawson, W. H	Park Head.
Millons, Robert	Walkerton.
Manly, David	Riversdale.
McKillop, Hugh	Hepworth.
McIvor, John	McIvor.
McFarlane, Duncan	Red Bay.
McDonald, Donald	Ripley.
Pratt, John	Kincardine.
Richards, Chas. A	Tara.
Scott, John	Dyer's Bay.

Brant.

Montgomery, C. A.....Brantford.
McLaughlin, Geo. W ..... "
Irving, Robert, P .....Glenmorris.
Kitchen, E. C.....St. George.

Carleton.

Graham, R. T .....South March.
St. George, George .....Ottawa.

Dufferin.

Durkin, William .....Bowling Green.
Gordon, James .....Monticello.
Hubbard, James J .....Orangeville.
Marshall, James E .....Shelburne.
Rowbotham, Wm .....Redickville.
Stewart, Wm..... "

Durham.

Hales, Hugh B .....Port Hope.

Dundas.

Cameron, Lachlin .....Iroquois.
Price James .....Inkerman.

Elgin.

Fairbrother, Wm .....St. Thomas.
Fowler, Jacob ..... Fingal.
Hannen, Isaac .....Union.
Hopkins, John .....St. Thomas.
Huffman, Jeremiah .....Aylmer.
Hammond, John ..... "
Kirkpatrick, Donald.....West Lorne.
Miller, Robert .....Lawrence Station.
Neely, John R .....Fingal.
Philpott, Wm. J.....Iona.
Thornton, Henry .....St. Thomas.

Essex.

Ontago, Daniel .....Petite Cote.
Banks, Anthony .....Harrow.
Britt, G .....Wheatley.
Cornette, Charles F.....Belle River.
Campbell, Duncan C .....Staples.
Feller, Wolfe.....Walkerville.
Gignac, Hillaire.....Gordon.
Gormley, John .....Essex.

Holland, Hugh	Comber.
Hillman, Jonas	Hillman.
Ives, Arthur	Leamington.
King, George	Ruthven.
Lindsay, William	Comber.
Lemaitre, Seraphrim	Tecumseth.
Masters, Allios	Sandwich.
Meloche, Joseph	"
Robert, Joseph	"
Rivard, Napoleon	Tecumseth.
Soulliere, Stephen	"
White, James H	Pelee Island.
Walker, Noe	St. Joachim.
Souchereau, Stephen	St. Clair Siding.
Mills, Charles	Wheatley.

Frontenac.

Albertson, George	Verona.
Brickwood, James H	Kingston.
Burke, Robert, jr	Clarendon Station.
Clark, Norman	Mississippi Station.
Davey, Sydney W	Murvale.
Dermott, J. A	Tichborne.
Dowker, William S	Harrowsmith.
Gilbert, Robert	Ompah.
Gates, George	Westbrook.
Greenwood, George	Wolfe Island.
Halliday, F	Mississippi Station.
Meeks, Mortimer	Bellrock.
Martin, John	Barriefield.
Pallier, Alexander	Wilmur.
Snooks, Edward H	Desert Lake.
Smith, David John	Parham.
Sly, Henry	Verona.
Tryon, Levi	Sharbot Lake.
Tallon, James	Arden.
Theobald, John M	Kingston.
Vaness, Marshall	Harlow.
Walker, Nelson	Cataraqui.
Woods, J. M	Arden.
Woodman, W. G	Allen (Wolfe Island.)
York, E. M	Bellrock.

Grey.

Campbell, Malcolm	Hanover.
Holmes, Geo. B	Walter's Falls.
Long, William	Kolapore.
Simmons, M. H	Oxenden.
Seigman, Ludwig	Neustadt.
Wilson, Wm. H	Shouldice.

Glengarry.

Clark, James	Dominionville.
Dickson, Daniel	Williamstown.
Dunn, Ambrose	South Lancaster.
McGillivray, Donald W	Dalkeith.
McNaughton, J. P	Laggan.
McDougall, D. P	Maxville.
McRae, Donald C	North Lancaster.
Stewart, M. W	Greenfield.

Hastings.

Airhart, Geo. W	Stirling.
Adams, George	Hermon.
Barr, Peter	Maynooth.
Brinklow, Henry	Ormsby.
Birrel, James	Glanmire.
Bowell, W. J	Tweed.
Faulkner, Dr. D. W	Foxboro'.
Faulkner, Dr. G W	Stirling.
Foster, Alexander	Egan Creek.
Mairs, James H	Bridgewater.
Reid, George	Madoc.
Rupert, Thomas	Spring Brook.
Stanyer, Thomas	Bancroft.
Speck, William	Bridgewater.
Sweet, W. H	Bancroft.
Sweet, W. James	"
Tivy, Richard S	Coe Hill.
Unwin, Walker	Bannockburn.

Halton.

Bradly, Stinson	Milton.
Brown, Robert M	Campbellville.
Crawford, Murray	"
Grant Lachlin	Georgetown.
Johnson, Walter M	Milton.
Lawson, John	Acton.
Racey, C. S	Milton.
Saunders, Edward G	Agerton.
Wilson, James	Bronte.

Huron.

Creech, James	Exeter.
Dalton, Morgan	Kingsbridge.
Gill, John	Exeter.
Horton, George	Gorrie.
Naftal, Chas. J. S	Goderich.
Paisley, William	Clinton.
Ross, John M	Blyth.
Sands, John	Saltford.
Seager, Charles	Goderich.
Scott, Alex	Westfield.

Haliburton.

Day, Joseph ..... Essonville.
Paul, Joseph ..... Haliburton.
Turnbull, James ..... Minden.

Haldimand.

Chrysler, Robert ..... North Cayuga.
Everingham, William ..... Canfield
Farrell, John ..... Cayuga.
Johnson, Peter ..... Dunnville.
Winslow, Martin ..... "

Kent.

Boles, Gordon ..... Chatham.
Crouch, Samuel ..... Ridgetown.
Eberts, Frank G ..... Chatham.
Johnson, W. J ..... Fargo.
Gardiner, Isaac ..... Morpeth.
Kime, George ..... Big Point.
Monday, Frederic ..... Mitchell's Bay.
Merritt, Asra ..... Ouvry.
McCollum, Thomas ..... Morpeth.
Robertson, Victor ..... Chatham.
Southgate, R. M ..... Wallaceburg.
Thomas, Joseph ..... Williams.

Lambton.

Blair, William ..... Port Lambton.
Bell, John ..... Port Franks.
Deans, James ..... Inwood.
Everest, G. M ..... Arkona.
Huddleston, John ..... Forest.
Kennedy, Joseph ..... Port Lambton
Miller, Frank ..... Port Franks.
Mott, Edwin L ..... Alvinston.
Taylor, J. P ..... Watford.

Lanark.

Deacon, Ephraim ..... Bolingbroke.
Farnall, William ..... Smith's Falls.
Mair, David ..... Lanark.
Kirkwood, Jas. W ..... Levant Station.

Leeds.

Bilton, George ..... Newboro'.
Gibson, John R ..... Mallorytown.
Lappin, J. J ..... Westport.
Murchie, Robert ..... Wilstead.
Smith, Justus ..... Charleston.
Sly, Lester ..... Morton.
Sliter, A. E ..... Morton.

Lennox.

Huff, Hiram W	Napanee.

Lincoln.

McPherson, James	St. Ann's.
Kennedy, C. A	Smithville.

Middlesex.

McCann, Peter	London.
Beverley, John	Dorchester Station.
Dixon, Michael	Cashmere.
McConnell, Wayland F	Gladstone.
O'Neill, W. H	Dorchester.
Ralph, Thomas J	Ballymute.
Ward, R. W	London, West.
Williams, Alfred M	Lobo.

Monck.

McDowell, Andrew	Stromness.
Moore, Daniel	Perry Station.

Muskoka.

Butler, C. F	Point Kaye.
Brown, Robert D	Port Sydney.
Brooks, Edgar, jr	Huntsville.
Berry, William	Walker's Point.
Bettes, J. H	Muskoka Mills.
Broadley, Enos	Beaumaris.
Chapman, Charles N	Huntsville.
Crompton, W. B	Aspdin.
Dart, Stephen	Dorset.
Davidson, William	Brackenrig.
Foreman, Walter	Port Carling.
Gouldie, E. J	Dwight.
Gohm, William	Bracebridge.
Grenke, Gustav	Rosseau.
Henderson, Charles	Bracebridge.
Harborn, John	Whiteside.
Hey, Joseph	Bracebridge.
Kaye, Alfred	Port Sydney.
Lawrence, John	Shannon Hall.
McLeod, John	Hammil's Point.
Paget, George	Huntsville.
Smith, J. D	Kilworthy.
Stephens, George	Shannon Hall.
Shannon, Peter	Port Carling.
Traves, Elias H	Fraserburg.
Taylor, C. N	Gravenhurst.
Thornton, Richard	Huntsville.
Wood, Michael	Clevelands.
Warne, Francis P	Baysville.
Wasdell, John	Bracebridge.

Norfolk.

Baker, Huit ..... Windham Centre.
Brown, Isaiah ..... Port Rowan.
Barrett, A. P ..... Port Royal.
Clark, Benjamin ..... Simcoe.
Duncan, James L ..... Forestville.
Dowswell, John ..... Lynedoch.
Ewing, Alex. R ..... Waterford.
Fick, Jerome B ..... Port Dover.
Hambley, William E ..... Rockford.
Kramer, Conrad ..... Delhi.
Nickerson, W. F ..... Simcoe.
Randall, Robert ..... Bookton.
Wilson, Abner ..... Lynedoch.

Northumberland.

Diamond, T ..... Cobourg.
Field, Cyrus W ..... Cobourg.
Fairbanks, Chas. S ..... Cobourg.
Merrian, H. N ..... Harwood.
Nimmo, T. J ..... Bensford.
Row, George ..... Carrying Place.
Wedlock, James ..... Bensford.
Wallace, Thomas ..... Gore's Landing.

Nipissing.

Armstrong, John ..... Haileybury.
Bard, T ..... Sturgeon Falls.
Garrow, E ..... Nipissing Junction.
Huntington, S. L ..... North Bay.
Jessup, Robert ..... Nipissing.
McNab, Donald ..... Nipissing.

Oxford.

Cuthbert, George ..... Woodstock.
Huntingford, Henry ..... Woodstock.
Martin, Richard ..... Woodstock.
Tisdale, J. C ..... Woodstock.

Ontario.

Bagshaw, Obed E ..... Vroomanton.
Frankish, F. M ..... Uxbridge.
Hall, Maxwell ..... Longford Mills.
Hadley, James ..... Liverpool Market.
Suiter, James ..... Longford Mills.
Gordon, John ..... Pickering.
Henry, T. S ..... Cedardale.
Miller, Arthur ..... Seagrave.
McGrath, Michael ..... Brechin.
McMillan, D ..... Beaverton.

McDermott, Geo ..... Port Perry.
Pettit, George ..... Port Perry.
Sutliffe, James ..... Prince Albert.
Willis, James ..... Whitby.
Williams, Charles ..... Glen Major.

Prince Edward.

Lake, Stephen ..... West Lake.
Rorabeck, Athol ..... Crofton.
Sprague, George G ..... Demorestville.

Peterborough.

Hartley, E. J ..... Peterboro'.
Ludgate, Theodore ..... Peterboro'.
Lambert, Henry ..... Silver Lake.
Moore, F. J ..... Lakefield.
Moore, D. H ..... Peterboro'.
McWilliams, J. B ..... Peterboro'.
Smith, J. W ..... Peterboro'.
Wedlock, William ..... Keene.

Parry Sound.

Burns, C. W., sr ..... South River.
Butler, Clarence H ..... Trout Creek.
Carmichael, William ..... Powassan.
Doupe, Sydney ..... Lawrence Mills.
Draycott, F. W ..... Ashdown.
Fry, Arthur ..... Seguin Falls.
French, Benjamin ..... Dunchurch.
Greer, A. J ..... Parry Sound.
Groom, Henry ..... Kearney.
Hollingshead, Walter M ..... Sprucedale.
Hall, William H ..... Sprucedale.
Johnson, John A ..... Parry Sound.
Kennedy, W. E ..... Magnetawan.
LaBrash, James P ..... Maple Island.
Mainprize, N ..... Golden Valley.
Mitchell, Robert ..... Cecebe.
McDonald, Arch ..... Sundridge.
McDermott, G. Benj ..... Sundridge.
McGowan, William ..... Parry Sound.
McAmmond, William ..... Dunchurch.
Ricker, David ..... Commanda.
Sloman, Alfred ..... Trout Creek.
Ward, Thomas B ..... Burk's Falls.

Prescott.

Bonville, Leon ..... St. Isidore de Prescott.
Barrett, John ..... Fournier.
Cunningham, A ..... Wendover.
Ferguson, William ..... Vankleek Hill.
James, Richard ..... Alfred.

LaBelle, Leonce	Curran.
LeRoy, Ralph	Barb.
Lefaivre, Hercule	Lefaivre.
Marston, Lewis F	L'Orignal.
Martineau, Joseph	Alfred.
McKercher, Peter	L'Orignal.
Ross, Joseph	Vankleek Hill.
St. Pierre, Pierre	St. Eugene.
Scott, David	Riceville.

Peel.

Rayburn, John	Caledon.
Walterhouse, Edward	Cooksville.

Perth.

Climie, W. R	Listowel.

Renfrew.

Brady John	Renfrew.
Biggs, William E.,	Pembroke.
Biggs, Aaron	Pembroke.
Coffey, William	Pembroke.
Halliday, James	Springtown.
Johnson, S. M.	Arnprior.
Kennedy, John	Pembroke.
McCagherty, P.	Pembroke.
McDonald, Alex	Pembroke.
Plaunt, Xavier	Renfrew.
Smith, Robert R.	Eganville.

Simcoe.

Baker, Daniel	Uhthoff.
Bathie, Edward	Cookstown.
Beardsley, Alfred W	Barrie.
Coombes, John	Lovering.
Chapman, James	Cookstown.
Fildey, George	Cookstown.
Hines, John	Barrie.
Kearns, George	Ivy.
Kitchen, Joseph	Lovering.
Moir, John	Cookstown.
Mills, William	Elmvale.
McLaughlin, James	Anten Mills.
Primrose, Alex	Apto.
Pollock, Thomas	Cookstown.
Ross, Joseph	Cookstown.
Regan, John	Orillia.
Rawson, William	Coldwater.
Shakell, William	Lovering.
Somerville, David	Stayner.
Upton, George	Nicholston.
Wilson, J. J.	Fesserton.

Victoria.

Bowins, Charles	Coboconk.
Crowe, Nathaniel	Bobcaygeon.
Dewdney, Arthur W	Bobcaygeon.
Daniel, John	Balsam Grove.
Ellis, J. A	Fenelon Falls.
Galloway, David	Moore's Falls.
Howie, John	Bury's Green.
Harris, Noxon	Bobcaygeon.
Henderson, Egerton	Lindsay.
Junkin, James	Fenelon Falls.
Lysh, William	Bobcaygeon.
McArthur, Donald	Manilla.
Nicholls, Gardiner	Bobcaygeon.
Silverthorn, George	Balsover.
Ray, John	Kirkfield.
Wills, T. J	Bobcaygeon.

Welland.

Augustine, Elias	Stonebridge.
Barnhart, George	Sherkston.
Beam, Horace H	Black Creek.
Griffin, Richard	Fort Erie.
Hershy, Milford	Garrison Road.
Miller, Charles A	Black Creek.
Michener, Cyrenus	Ridgeway.
Neff, Peter	Marshville.
Nixon, J. C	Welland.
Page, A. E. O	Ridgeway.
Rose, Charles, jr.	Garrison Road.
Risley, E. E.	International Bridge.
Teal, Irwin	Ridgeway.
Teal, C.	Ridgeway.
Sauer, Elias	Welland.

Waterloo.

Bulmer, George	Elmira.
Devitt, John	Waterloo.
Fraser, Alex	New Hamburg.
Gildner, Henry	Berlin.
Gillier, Peter	Galt.
Gress, Philip	Blair.
Hall, James	Hawksville.
Mengers, William	St. Jacob's.
Mayers, Frederick	Bridgeport.
Mickers, Joseph	Heidleberg.
McCruden, Robert	Galt.
McMaster, Thomas	Hespler.
Stark, John	Hespler.
Springer, Joseph	Kossuth.

Wentworth.

Gallin, Warren	Waterdown.
Raspberry, William	West Flamboro'.

Wellington.

Atkinson, George Osborne	Guelph.
Gay, William	Elora.
Gilchrist, John W	Kilean.
Hull, Wellington	Erin.
Love, James	Guelph.
Lang, George	Hillsburg.
McGinnis, Alex	Arkell.
Robertson, Thomas	Kilean.
Stewart, Donald	Creiff.
Smith, George	Eden Mills.
Stovel, Thomas	Mount Forest.
Williams, Henry M.	Guelph.

York.

Browne, Hume	Toronto.
Hope, W. B	Toronto.
Tidsberry, James L	Coleman.
Kennedy, James	Toronto.

Province of Quebec.

*Cowley, E. A.	Montreal.
*Finnie, Dr. J. T.	Montreal.

*These officers have been specially appointed to enforce the Game Laws on Lake St. Francis, which is partly in Ontario and partly in Quebec.

TABLE OF CASES

District or county.	Name of prosecutor.	Date. 1894.	Name of offender.	Address.	Offence charged.
Algoma ..	Robert Rush.....	October 20	H. F. Dunbar	U. S	Shooting without license .....
do ..	do	do 20	H. S. Dunbar	do	do .....
do ..	do	do 20	J. Campbell.....	do	do .....
Addington.	George Albertson.	Nov. 22	J. Reynold	Verona	Spearing .....
do	do	do 22	W. Jackson	do	do .....
do	do	do 22	P. Reval	do	do .....
do	do	do 22	B. Reval	do	do .....
do	do	do 22	S. Reval.....	do	do .....
do	do	do 22	H. Reynolds	do	do .....
do	J. A. Dermott....	Jan. 10	....	.....	.....
Bruce	David Manly.....	August 25	John Arnovine	Chepow	Sunday fishing.....
do	do	do 25	Michael Lesgouse.....	do	do .... .
do	do	do 25	Jacob Kreohlin	do	do .....
do	do	do 25	Joseph Shurter	do	do .....
do	do	October 20	A. Huffman.....	Riversdale	Trapping out of season ....
Carleton ..	Wm. Farnell	Dec. 8	Allen Findlay.....	Smith's Falls.....	Breaking muskrat houses .....
do ..	R. T. Graham....	....	....	....	....
Essex	Jos. Roberts	.....	Jos. Schafer.....	Wyandott.....	Sunday shooting ....
Elgin	Wm. Fairbrother.	Sept. 21	Arthur Simpson	Lawrence Station.	Illegal shooting.....
do	Robert Miller	.....	Arthur Simpson.....	do	do .....
Frontenac.	J. H. Brickwood..	March 13	J. F. Fallon	Portsmouth	Opening muskrat houses .....
do	do ..	do 9	Geo. Simmons.....	do	Illegal fishing .....
do	do ..	do 8	C. Jackson.....	....	do ....
do	do ..	April 20	Jas. Barnes	.....	do .....
do	do ..	Aug. 18	G. L. Freeburn	... .	Illegal shooting ....
do	do ..	Nov. 20	W. Ball.....	....	Selling otter skin ...
Glengarry .	Ambrose Dunn...	April 16	.....	.. ..	.....
do	do ...	do 18	.....	....	....
Grey	Malcolm Campbell	Jan. 2	B. E. Lines	Walkerton	Shooting out of season.....
do	Geo. B. Holmes ..	Feby. 28	Thirkle Barr.....	Meaford	do ....
do	do .	do 28	Jno. D. McIntosh	do	do ....
do	do ..	do 28	Geo. Walmsley	do	do .....
do ...	do ..	Aug. and Sept. ..	....	....	....
do	do ..	Sept. and October	.....	.....	.....
do	do ..	Dec. 18	....	.....	....
do	do ..	Nov. 3	.....	.....	.....
do	Ludwig Siegman..	July 13	John Knapman	Clifford	Illegal fishing .....
do	do ..	do 13	Noa Unger	do	do .....
do	do ..	August 4	Henry Breman	do	do .....
do	do ..	Nov. 29	Charles Peter	Moltke	Sunday shooting....
do	do ..	do 29	Jacob Peter	do	do ....
Haliburton	James Turnbull ..	August 26	Geo. W. Stevens.....	Minden	Selling deer out of season..... .....
do	do ..	June 16	Thos. Stinson & Sons..	do	Allowing sawdust to be thrown in river.
do	do ..	Nov. 18	do ..	do	do .

FOR YEAR 1894.

Was offender arrested or summoned.	Where tried.	Name of magistrate.	Result of case.	Nets, traps or illegal appliances seized during the season of 1894.
Summoned	Sault Ste. Marie	George Bender	$25 and costs	
do	do	do	$25 do	
do	do	do	$25 do	
do	Verona	S. Q. Reynolds	Dismissed	
do	do	do	do	
do	do	do	do	
do	do	do	do	
do	do	do	do	
do	do	do	do	
				Seized and burned 40 rods gill net.
Summoned	Walkerton	A. W. Robb	$1 and costs	
do	do	do	$1 do	Destroyed a number of traps.
do	do	do	$1 do	
do	do	do	$1 do	
do	Riversdale	A. Simon	$5 do	
do	Smith's Falls	Michael Gardiner.	$10 do	Seized 1 net, 2 traps, have them in possession.
				5 traps and 1 net.
Gun taken from him.	Did not appear.	Mr. Bartlet	Confiscated gun	
Summoned	St. Thomas	John McCausland.	Dismissed	
do	do	do	do	
do	Portsmouth	D. J. Walker	$5	
do	do	do	$10	
do	do	do	$10	
do	do	do	$5	
do	do	do	$5	
do	do	do	$10	
				Seized 1 net and destroyed 1.
				Seized 1 net, have it still in possession.
Summoned	Tp. Brant	Alex. Kerr	$5 and costs	Destroyed 1 wooden fish trap.
do	Meaford	A. McK. Cameron.	$5 do	
do	do	James Stewart	$5 do	
do	do	do	$5 do	
				Destroyed 16 snares.
				Destroyed a number of steel traps.
				Shot 1 hound chasing deer.
				Confiscated 1 net and 4 night lines.
Summoned	Anton	W. H. Ryan	$10 and costs	
do	do	do	$10 do	
do	do	do	$10 do	
do	do	do	$1 do	
do	do	do	$1 do	
do	Minden	Wm. Fielding	$20 and costs	
do	do	do	$10 do	
do	do	do	Dismissed	

TABLE OF CASES FOR

District or county.	Name of prosecutor.	Date. 1894.	Name of offender.	Address.	Offence charged.
Hastings .	Walker Unwin...	Jan. 26	P. Fraser	Unknown	Shooting without license
do ..	do ..	Feb. 13	J. Groves		do
do ..	do ..	October 15	F. Morrill		do
do ..	do ..	do 15	J. Putman	U. S.	do
do ..	Thos. Stanyer ...				
do ..	H. K. Smith	April 18	G. Bouter	Murray	Shooting ducks
do ..	do		B. Bishop	do	do
do ..	do		G. Snider	do	do
do ..	do	April 30	J. McGee	do	do
do .	do	May 2	B. Filion	do	do
do ..	do	do 2	F. Bayette	do	do
do ..	do	do 15	J. Bryant, Sr	do	do
do ..	do	do 15	J. Bryant, Jr	do	do
do ..	do	do 15	Wm. Rundle	do	do
do ..	do	do 15	W. Rundle	do	do
do ..	do	do 15	J. Jackson	do	do
do ..	do	do 15	S. Crowter	do	do
do ..	do	May 15	D. Goulding	do	do
do ..	do	do 15	G. Nolan	do	do
do ..	do	July 6	Wm. Laird	do	Killing beaver
do ..	do	August 13	W. A. Fields	Lanark	Hunting hares
do ..	do	do 13	J. McInnes	do	do
do ..	do	do 13	Dr. Scott	do	do
do ..	do	Sept. 8	E. Wigg	Apsley	Hunting deer
do ..	do	do 21	Randall Clarke	Consecon	Shooting ducks
do ..	do	Nov. 12			
do ..	do	Dec. 26			
Leeds	Justus Smith	October 29			
Lennox ...	Wesley Huff		Ant. Robinson		Illegal fishing
do	do		P. Mellow		do
do	do		David Reckley		do
do ..	do		Thomas Lloyd		do
do ..	do		Jacob Bellet		do
do ..	do		Chas. White		do
do ..	do		Bruce Robinson		do
do ..	do		George Sharpe		do
do ..	do		Jacob Reeve		do
Muskoka..	C. E. Maudsley...	December	Fritz Bros.	U. S.	Killing game out of season
do ..	Michael Woods...	Dec. 29	Doolittle & Anderson.	Hammel's Point ..	Having venison in possession during close season
Monck	John A Gill	August 13	J. C. Gould	Jordan Station ...	Illegal shooting
do .	do	do 10	John Crumb	Dunnville	do
do ..	do	Nov. 19	Edward Angle	Attercliffe	Trapping
do ..	do	do 19	Andrew Sensabayh	do	do
do ..	do	do 5	Chas Highton	Stromness	Shooting duck out of season
do ..	do	Sept. 22	William Gibson and John Gibson	do	do
do ..	do	Nov. 5	George Dodge	do	do
do ..	do	do 5	John Cummings	do	do
do ..	do	do 19	R. Ecker	Wainfleet	Trapping and having furs in possession out of season
do ..	do	do 19	Chas. Barnell	Moulton	do
do ..	do	Dec. 5	William Souter	Gainsboro'	do
do ..	do	do 5	G. D. Ray	North Cayuga	do
do ..	do	do 5	Rueben Windiske	do	do
do ..	do	do 5	Joseph Whipple	Dunnville	do
do ..	do	do 5	Jesse Adams	Wainfleet	Selling furs trapped out of season

YEAR 1894 —*Continued.*

Was offender arrested or summoned	When tried.	Name of magistrate.	Result of case.	Nets, traps or illegal appliances seized during the season of 1894.
Summoned	St. Ola	P. P. Clark	$20 and costs	
do	Madoc	E. K. O'Flynn	$20 do	
do	Bannockburn	Jas. Markland	Discharged	
do	do	do	do	
				Seized 1 net.
Summoned	Murray	H. K. Smith	$5	
do	do	do	$5	
do	do	do	$5	
do	do	do	$10	
do	do	do	$25	
do	do	do	$25	
do	do	do	$10	
do	do	do	$10	
do	do	do	$15	
do	do	do	$15	
do	do	do	$5	
do	do	do	$5	
do	do	do	$5	
do	do	do	$5	
do	West Lake	do	Dismissed	
do	Lanark	do	$5	
do	do	do	$5	
do	do	do	Dismissed	
do	Apsley	A. Brown	$45	
do	Consecon	P. Beech	$5	
				Seized and sold furs, $11.50.
				do 5.60.
				Seized some nets and returned them.
Summoned	Napanee	James Daly	$10	
do	do	do	$10	
do	do	do	$10	
do	do	do	$10	
do	do	do	$10	
do	do	do	$10	
do	do	do	$10	
do	do	do	$10	
do	do	do	$20	
Arrested	Bracebridge	Jas. Boyer	$5 and costs	
Summoned	Port Carling	P. M. Shannon	$25 do	
Arrested	Dunnville	John A. Gill	$5	
do	do	do	$5	
Settled without being summoned.			$5	
Arrested	Dunnville	John A. Gill	$5	
do	do	John Taylor	Dismissed	
do	do	do	do	
do	do	A. D. Stewart	do	
do	do	do	do	
Summoned	do	do	$10 and costs	
do	do	do	$10 do	
do	do	do	Dismissed	
do	do	do	$10 and costs	
do	do	do	$10 do	
do	do	do	Sent to jail.	
do	do	do	$10 and costs	

TABLE OF CASES FOR

District or county.	Name of prosecutor.	Date. 1894.	Name of offender.	Address.	Offence charged.
Middlesex.	W. H. O'Neil....	June 15	William Case.....	Dorchester Station	Spearing with torch light.
do	do	do 15	Walter Hayes	do	do
do	do	do 15	Duncan Black.....	Derwent	do
do	R. W. Ward.....	May 17,-18	William Case.....	North Dorchester.	Killing bass and spearing fish.
do	do	do 17,-18	Walter Hayes	do	do
do	do	do 17,-18	Duncan Black.....	do	do
do	do	May 26	John Sutherland.....	London Tp	Obstructing fish way.
do	do	April 6	John Crouse.....	Byron.....	do
Nipissing .	F. Bard.....	Sept. 9	Isidore Taulette.....	Sturgeon Falls....	Shooting out of season.
do ..	do	do 9	Joseph Gauthier.....	do	do
Ontario ...	James Sutliffe and George Pettit.	Nov. 23	John Jackson	.....	Having rat skin in possession.
		do 27	Joseph Hadley.	.....	do
		Dec. 30	Joseph Avory	.....	do
do	Geo. W. Pettit ..	July 13	H. E. Hutchison.....	Scugog	Sunday fishing.
do	do ...	do 13	R. B. Rice.	.....	do
do	James Hadley....	.....	.....	.....	.....
do	James Willes.....	Dec. 26	.....	.....	....
Peterboro'.	J. W. Wedlock...	.....	....	....	....
Simcoe	Walter Foreman	November	— Johnston....	Toronto	Having fish in possession out of season.
do	do ..	do	P. M. Shannon	Port Carling.....	do
do	do ..	do	do	do	Netting.
do	J. H. Willmott...	Feby. 3	John Burns	London	Killing more than 2 deer.
do	do	do 6	G. Heintzman.....	Toronto	Sunday hunting.
do	do	do 6	— Bennett.	do	do
do	do	Nov. 7	P. M. Shannon	Port Carling.....	Having herring in possession during close season.
do ...	do	do 7	do	do	Netting.
do	do	....	J. W. Hey.....	Bracebridge	Illegal possession of furs.
do	do	Dec. 17	Wm. McClelland	Whitestone.....	Killing a moose.
do	do . ..	do 17	Doolittle & Anderson.	do	Having moose meat in possession.
Victoria ..	Geo. Silverthorn..	May 1	J. D. Fleming	.....	Fishing with torches
do ..	N. Crowe.....	Jan. 27	Fremont Crandel. . ..	....	Allowing dogs to run out of season.
Waterloo ..	George Bulmer .	.....	H. Mogh	Elmira	Shooting game out of season.
do ..	do ..	....	J. Hahn	do	do

YEAR 1894.—*Concluded.*

Was offender arrested or summoned.	Where tried.	Name of magistrate.	Result of case.	Nets, traps or illegal appliances seized during the season of 1894.
Summoned	London	Squire Lacey	$1 and costs	
do	do	do	$1 do	
do	do	do	$1 do	Seized and destroyed.
do	do	do	$2 do	
do	do	do	$2 do	
do	do	do	$2 do	Seized and destroyed 2 spears.
do	do	do	$2 do	
do	do	do	$4 do	
Arrested	Sturgeon Falls	Jno. Holditch	$5 do	
do	do	do	$5	Seized gun but returned it.
Summoned	Port Perry	John Watt	$5 and costs	Seized 16 rat skins.
do	do	do	$5 do	Seized 56 rat skins.
do	do	do	$5 do	Seized 1 rat skin.
do	do	do	$5 do	
do	do	do	$5 do	
				Seized 1 net and have the same still in possession.
				Seized 4 traps and have same in possession still.
				Destroyed 60 traps.
Arrested	Port Carling	W. Hannon	$10	
Summoned	Point Kaye	J. F. Butler, J.H.Willmott, J. Inglass, W. Davidson.	$10	Seized about 400 yards of Mr. Shannon's nets.
do	do	do	$10	
		J. H. Willmott	$20 and costs	
		do	$5 do	
		do	$5 do	
Summoned	Point Kaye	C. F. Butler, J.H.Willmott, J. Inglass	$10 do	These cases are appealed.
do	do	W. Davidson	$10 do	
Premises searched		J. H. Willmott	$10 and costs and confiscated furs.	
Summoned	Whitestone	H. K. Smith, J.H.Willmott.	$50 and costs	
do	do	do	$25 do	
do	Woodville	W. M. Cameron.	$5 do	
do	Harvey	Mr. Seymore	$20	
Summoned	Elmira	R. Powell	$5 and costs	
do	do	do	$5 do	

BY AUTHORITY.

GENERAL RULES AND ORDERS

MADE BY

THE COURT OF APPEAL

FOR ONTARIO,

RESPECTING

THE TRIAL OF ELECTION PETITIONS

PURSUANT TO

THE ONTARIO CONTROVERTED ELECTIONS ACT,
R. S. O. CHAP. 10.

PROMULGATED 24TH SEPTEMBER, 1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1895.

GENERAL RULES AND ORDERS

MADE BY

THE COURT OF APPEAL FOR ONTARIO,

RESPECTING THE TRIAL OF ELECTION PETITIONS, PURSUANT TO THE ONTARIO CONTROVERTED ELECTIONS ACT, R. S. O. (1887), CHAPTER 10.

I.

1. The Presentation of an Election Petition complaining of the undue election or return of a Member of the Legislative Assembly, or complaining of any unlawful and corrupt act of any candidate at such Election who was not returned, shall be made by leaving it, together with the affidavit prescribed by *The Ontario Controverted Elections Act*, at the office of the Registrar of the Court of Appeal, who, or his clerk, shall (if required) give a receipt which may be in the following form :

Received on the day A.D., at the office of the Registrar of the Court of Appeal, a petition (*here state the purport of the said petition*) for the Electoral District of the (*state the place*) purporting to be signed by (*insert the name of Petitioner*) and the affidavit of the said Petitioner annexed thereto.

A. G., *Registrar.*

2. With the Petition shall also be left a copy thereof for the said Registrar of the Court of Appeal to send to the Returning Officer, pursuant to section 12 of the said Act, as amended by 54 Victoria, chapter 6.

II.

1. An Election Petition shall contain the following statements :—

(*a*) The right of the Petitioner to petition as defined by the said Act.

(*b*) The holding and result of the Election, and a brief statement of the facts and grounds relied on ; and shall conclude with a prayer, stating the relief claimed.

2. Evidence is not to be stated in the Petition.

III.

The Petition shall be divided into paragraphs, each of which, as nearly as may be, shall be confined to a distinct portion of the subject, and every paragraph shall be numbered consecutively, and no costs shall be allowed of drawing or copying any Petition not substantially in compliance with this Rule, unless otherwise ordered by the Court or a Judge.

IV.

The following form of a Petition, or one to the like effect, shall be sufficient:

IN THE COURT OF APPEAL.

The Ontario Controverted Elections Act. Election for the Electoral District of the (*state the place*) holden on the day of A.D.

The Petition of A. of , *or* of A. of and of B. of , (*as the case may be*), whose name, *or* names is, *or* are, subscribed.

1. Your Petitioner A. is a person who voted, *or* had a right to vote (*as the case may be*) at the above Election, *or* claims to have had a right to be returned at the above Election, *or* was a candidate at the above Election; *or*, (*in the case of a cross petition*), is the Respondent in the Petition presented by A., *or* is a person who voted, *or* had the right to vote (*as the case may be*), at the above Election.

2. And your Petitioner states that the Election was holden on the day of A.D. , when A.B., C.D. and E.F. were candidates, and the Returning Officer has returned A.B. as being duly elected.

3. And your Petitioner says that (*here state the facts and grounds on which the Petitioner relies*).

Wherefore your Petitioner prays that it may be determined that the said A.B. was not duly elected or returned, and that the Election was void, *or* that the said E.F. was duly elected and ought to have been returned (*or as the case may be*); *or* (*in the case of a cross petition*), that the said C.D. *or* E.F. (*or as the case may be*) may be declared guilty of the unlawful and corrupt practices and acts alleged.

(*Signature of petitioner or petitioners.*)

V.

With the Petition, the Petitioner shall leave at the office of the Registrar of the Court of Appeal a writing, signed by him or on his behalf, giving the name of some person entitled to practise as a Solicitor, or whom he authorizes to act as his Agent, or stating that he acts for himself, as the case may be; and in either case giving an address, within the City of Toronto, at which notices addressed to him may be left; and if no such writing be left or address given, then all notices and proceedings may be given to and served on the petitioner by the respondent by sticking up the same at the office of the Registrar of the Court of Appeal.

VI.

Any person returned as a Member, and any person who may be a respondent under sections 5 and 7 of the said Act, may at any time after the election, send to or leave at the office of the Registrar of the Court of Appeal, a writing signed by him or on his behalf, appointing a person entitled to practise as a Solicitor, to act as his Agent in case there should be a petition against him, or stating that he intends to act for himself; and in either case giving an address within the City of Toronto, at which notices may be left, and in default of such writing being left within a week after service of the petition, notices and proceedings may be given and served respectively on any such respondent by sticking up the same at the office of the Registrar of the Court Appeal.

VII.

An Agent employed for the Petitioner or Respondent shall forthwith leave written notice at the office of the Registrar of the Court of Appeal, of his

appointment to act as such Agent, and service of notices and proceedings upon such Agent shall be sufficient service thereof on his principal for all purposes.

VIII.

The Registrar of the Court of Appeal shall keep a book or books at his office in which he shall enter the names of such agents, and of all addresses given under either of the preceding Rules, which book shall be open to inspection by any person during office hours, without payment of any fee.

IX.

The Registrar of the Court of Appeal shall, upon the presentation of the Petition, and notice of the deposit of money, forthwith send a copy of the Petition to the Returning Officer, pursuant to the said Act, as amended by 54 Victoria, chapter 6, and shall therewith send the name of the Petitioner's Agent, if any, and of the Respondent's Agent, if any, and the Returning Officer shall forthwith publish those particulars along with the notice prescribed by the said amending Act.

The cost of the publication of this, and of any other matter required to be published by the Returning Officer, shall be paid by the Petitioner, or person moving in the matter, and shall form part of the general costs of the Petition.

X.

Where the Respondent has named an Agent or given an address, at which notices addressed to him may be left, the service of an Election Petition may be made by delivery of it to the Agent, or by posting it in a registered letter to the address given, at such a time that, in the ordinary course of post, it would be delivered within the prescribed time.

In other cases the service must be personal on the Respondent, unless the Court or a Judge on an application made not later than five days after security is given, on affidavit showing what has been done, shall be satisfied that all reasonable effort has been made to effect personal service, and to cause the matter to come to the knowledge of the Respondent, including, when practicable, service upon his agent for Election expenses, in which case the Court or a Judge may order that what has been done shall be considered sufficient service, subject to such conditions as may be reasonable.

XI.

In case of evasion of service, the sticking up in the office of the Registrar of the Court of Appeal a notice of the Petition having been presented, stating the name of the Petitioner, and the relief prayed, shall be deemed equivalent to personal service, if so ordered by the Court or a Judge.

XII.

The deposit of money by way of security for payment of costs, charges and expenses payable by the Petitioner, shall be made by payment into the Canadian Bank of Commerce in Toronto, to an account to be opened there as directed by the said Act; and the Bank on receiving the said deposit of money shall give a receipt or certificate for the same in duplicate, one copy to be given to the party making the deposit, and the other to be forthwith left at the office of, or posted to, the Accountant of the Supreme Court of Judicature for Ontario.

XIII.

All claims to the money deposited in the Bank for payment of costs, charges and expenses payable by the Petitioner, pursuant to the said Act, shall be disposed of by order of the Court or a Judge.

XIV.

Money so deposited shall, if, and when the same is no longer needed for securing payment of such costs, charges and expenses, be returned or otherwise disposed of as justice may require, by order of the Court or a Judge.

XV.

Such order may be made after such notice of intention to apply, and proof that all just claims have been satisfied, or otherwise sufficiently provided for, as the Court or a Judge may require.

XVI.

The order may direct payment either to the party by whom the same was deposited, or to any person entitled to receive the same.

XVII.

The Accountant shall file the Bank receipt or certificate, and keep a book open to inspection of all parties concerned, in which shall be entered from time to time a memorandum of all such Bank receipts or certificates and the amounts thereof, and the Petitions to which they are respectively applicable, which book may be inspected without payment of any fee.

XVIII.

Ten days after the service of the said Petition, on the Respondent, or his agent, or in the manner prescribed by the said Act or these Rules, the Petition shall be at issue, unless otherwise ordered by the Court or a Judge.

XIX.

At any time after the Election Petition is at issue, either party, by order of the Court or a Judge, may have production and inspection of all books, lists, commissions, ballots, certificates, statements, papers, documents and returns whatsoever, relating to the Election, returned to, or in possession of the Clerk of the Crown in Chancery, at such place and in such manner, and upon such terms as the Court or a Judge shall direct. And for the purpose of such production and inspection, and for the purposes of the trial of the Election Petition, the Clerk of the Crown in Chancery shall deliver or transmit the said books, lists, commissions, ballots, certificates, statements, documents, papers and returns in such manner and to such officer as by order of the Court or a Judge shall be directed.

The said books, lists, commissions, ballots, certificates, statements, documents, papers and returns shall be returned to the custody of the Clerk of the Crown in Chancery after the trial of the Petition, or after the purpose has been served for which their delivery or transmission was required.

XX.

When a Petitioner claims the seat for an unsuccessful candidate, alleging that he had a majority of lawful votes, the party complaining of, and the party defending, the Election or return, shall, fourteen days before the day appointed for the trial, leave with the Registrar of the Court of Appeal and also give to the respective agents, or at the respective addresses, if any, given by the Petitioner and Respondent (*as the case may be*), particulars of the votes intended to be objected to, and of the heads of objection to each vote, verified by affidavit as prescribed by the said Act.

XXI.

When a Petition alleges corrupt practices against a Respondent or his agents, the Petitioner shall fourteen days before the day appointed for the trial, leave with the Registrar of the Court of Appeal, and also give to the Respondent, or his agent, particulars in writing of the specific corrupt practices charged, specifying the persons alleged to have been guilty of the same, together with their addresses, as far as known, and also specifying the times and places when the specific corrupt practices were committed by or between the persons charged, and also of any illegal practices intended to be relied upon, as may, in connection with the said alleged corrupt practices, affect the result of the election, verified by affidavit as prescribed by the said Act.

XXII.

When at the trial of a Petition, complaining of an undue election or return, and claiming the seat for some person, the Respondent intends to give evidence to prove that the election of such person was undue, such Respondent shall, fourteen days before the day appointed for the trial, leave with the Registrar of the Court of Appeal and also give to the Petitioner, or his agent, particulars of the objections to the election or return of such person upon which he intends to rely, verified by affidavit, as prescribed by the said Act.

XXIII.

When a Petitioner, in a cross Petition under section 7 of the Act alleges that unlawful and corrupt acts were committed by any candidate at the same election, who was not returned, he shall fourteen days before the day appointed for trial, leave with the Registrar of the Court of Appeal, and also give to the Respondent, or his agent, particulars in writing of the alleged unlawful and corrupt acts of the said candidate, verified by affidavit as prescribed by the said Act.

XXIV.

The Court or a Judge may at any time order such further particulars as may be necessary to prevent surprise and unnecessary expense, and to insure a fair and effectual trial, in the same manner as in ordinary proceedings in the High Court of Justice, and as prescribed by the said Act, and upon such terms as may be ordered.

XXV.

The Registrar of the Court of Appeal shall allow inspection and, on request, shall furnish office copies of the particulars specified in the five preceding rules.

to all parties concerned; and no evidence shall be given against the validity of any vote, nor upon any head of objection, or corrupt or illegal practice, not specified in the particulars, except by leave of the Court or a Judge upon such terms as may be ordered.

XXVI.

The Registrar of the Court of Appeal shall make out a list of the Petitions and cross Petitions filed in his office, and the dates of filing the same respectively. In it he shall insert the names of the Agents of the Petitioner and Respondent, and the addresses to which notices may be sent, if any. The list may be inspected at the office of the Registrar of the Court of Appeal at any time during office hours, and shall be put up for that purpose upon a notice board appropriated to proceedings under the said Act, and headed "The Ontario Controverted Elections Act."

XXVII.

The time and place of the trial of each Election Petition shall be fixed by the Judges on the rota, and notice thereof shall be given in writing by the Registrar of the Court of Appeal, by sticking notice up in his office, sending by post one copy to the address given by the Petitioner, another to the address given by the Respondent, if any, another to the Clerk of the Crown in Chancery, and another to the Sheriff, fifteen days before the day appointed for the trial. The Sheriff shall forthwith publish the same in the Electoral District.

XXVIII.

The sticking up of the notice of trial at the office of the Registrar of the Court of Appeal shall be deemed and taken to be notice in the prescribed manner within the meaning of the said Act, and such notice shall not be vitiated by any miscarriage of, or relating to, the copy or copies thereof to be sent as hereinbefore directed.

XXIX.

The notice of trial may be in the following form:

THE ONTARIO CONTROVERTED ELECTIONS ACT.

Election Petition for the Electoral District of the (*state the place*). Take notice that the above Petition (*or* Petitions), will be tried at on the day of A.D., and on such other subsequent days as may be needful.

Dated the day of A.D.

By order.

A. G.
Registrar of the Court of Appeal.

XXX.

The title of the Court of Record for the trial of an Election Petition may be as follows:

Court for the trial of the Election Petition for the Electoral District of the (*state the place*) between , Petitioner, and , Respondent. And it shall be sufficient so to entitle all the proceedings in that Court.

XXXI.

An officer shall be appointed for each Court to be holden for the trial of an Election Petition, by the Judge or Judges assigned to hold the same, who shall attend at the trial in like manner as the Clerks of Assize attend at the Sittings of the High Court.

Such officer may be called the Registrar of that Election Court. He, or in case of need his sufficient Deputy, shall perform all the functions incident to an officer of a Court of Record, and also such duties as may be prescribed to him, or directed by the said Judge or Judges.

XXXII.

The Clerk of the Crown in Chancery shall, on or before the day fixed for the trial, deliver, or cause to be delivered, to the Registrar of the Election Court for the trial of the Petition, or his Deputy, the Poll Books, and other documents relating to the said Election, for which the said Registrar, or his Deputy, shall give, if required, a receipt; and the said Registrar, or his Deputy, shall keep in safe custody the said Poll Books and other documents until the trial is over, and then return the same to the proper officer.

XXXIII.

At the time appointed for the trial of the Election Petition, the Petitioner shall leave with the Registrar, for the use of the Judge or Judges at the trial, fairly written on one side of the paper only, a copy or copies of the Petition and of all the proceedings thereon, which show the several matters to be tried, including the particulars of objections or corrupt practices or illegal acts, on either side; the correctness of which copy or copies, in so far as the proceedings are filed with the Registrar of the Court of Appeal, shall be certified by the said Registrar. The Judge or Judges may allow amendment of the said copy or copies. In default of such copy or copies being delivered, the Judge or Judges may refuse to try the Petition or may allow a further time for delivery, or may adjourn the trial, in every case upon such terms, as to costs and otherwise, as the Judge or Judges shall see fit to impose.

XXXIV.

The Judge or Judges assigned to try the Election Petition may from time to time, by order made upon the application of a party to the Petition, or by notice to be sent to the Sheriff, in such form as may be directed, postpone the beginning of the trial to such day as may be named, and such notice, when received, shall be forthwith made public by the Sheriff.

XXXV.

In the event of the Judge or Judges not having arrived at the time appointed for the trial, or to which the trial is postponed, the commencement of the trial shall, *ipso facto*, stand adjourned to the ensuing day, and so from day to day.

XXXVI.

No formal adjournment of the Court for the trial of an Election Petition shall be necessary, but the trial is to be deemed adjourned, and may be continued from day to day until the enquiry is concluded; and in the event of the Judge or Judges who begin the trial being disabled by illness or otherwise, it may be re-commenced and concluded by another Judge or Judges.

XXXVII.

The application to state a special case may be made to the Court of Appeal when sitting, or by motion before a Judge at Chambers.

XXXVIII.

The reasonable costs of any witness shall be ascertained by the Registrar of the Election Court, and the certificate allowing them shall be under his hand, subject to an appeal to the trial Judge or Judges.

XXXIX.

The Order of the Election Court or a Judge to compel the attendance of a person as a witness may be in the following form:

Court for trial of the Election Petition for the Electoral District of the (*state the place*). The day of A.D.

To A. B., (*describe the person*). You are hereby required to attend before the above Court at (*place*), on the day of , at the hour of *or* forthwith, (*as the case may be*), to be examined as a witness in the matter of the said Petition, and to attend the said Court until your examination shall have been completed.

As witness my hand,

A. B.,

Judge of the said Court.

XL.

In the event of its being necessary to commit any person for contempt, the warrant may be as follows:

At a Court holden on at for the trial of the Election Petition for the Electoral District of the (*state the place*) before the Honorable one of the Judges (*or* before the Honorable and the Honorable the Judges) on the rota for the trial of Election Petitions, pursuant to "The Ontario Controverted Elections Act."

Whereas, A. B. has this day been guilty, and is by the said Court adjudged to be guilty, of a contempt thereof; the said Court does, therefore, sentence the said A. B. for his said contempt to be imprisoned in the common gaol of the County *or* City, (*as the case may be*) of , for the space of calendar months, and to pay to our Lady the Queen a fine of $, and to be further imprisoned in the said gaol until the said fine be paid. And the Court further orders that the Sheriff of the said County (*or as the case may be*) and all constables and officers of the Peace of any County or place where the said A. B. may be found, shall take the said A. B. into custody, and convey him to the said gaol, and there deliver him into the custody of the gaoler thereof to undergo his said sentence. And the Court further orders the said gaoler to receive the said A. B. into his custody, and that he shall be detained in the said gaol in pursuance of the said sentence.

Dated the day of A.D.

(*To be signed by the Judge or Judges.*)

XLI.

Such warrant may be made out and directed to the Sheriff or other person having the execution of process of the High Court, as the case may be, and to all constables and officers of the Peace of the County or place where the person adjudged guilty of contempt may be found; and such warrant shall be sufficient without any further particularity, and shall and may be executed by the persons to whom it is directed, or any or either of them.

XLII.

After the trial of any Election Petition, the Judge or Judges shall return to the Registrar of the Court of Appeal the evidence and proceedings before the Election Court and the finding on the said Petition.

XLIII.

Notice of an application for leave to withdraw a Petition shall be in writing and signed by the Petitioner or his agent. It shall state the ground on which the application is intended to be supported. The following form shall be sufficient:

The Ontario Controverted Elections Act. The Electoral District of the (*state the place*). Petition of (*state petitioner*), against (*state respondent*), presented day of A. D.

The Petitioner proposes to apply to withdraw his Petition upon the following ground (*here state the ground*), and prays that a day may be appointed for hearing his application.

Dated this day of A.D.

(*Signature of Applicant*).

XLIV.

The notice of application for leave to withdraw shall be delivered to the Registrar of the Court of Appeal.

XLV.

A copy of such notice of the intention of the Petitioner to apply for leave to withdraw his Petition shall be given by the Petitioner to the Respondent, and to the Returning Officer, who shall make it public in the Electoral District to which it relates, and it shall also be forthwith published by the Petitioner in at least one newspaper published or circulating in the Electoral District, if any.

The following may be the form of such notice:

The Ontario Controverted Elections Act. Election Petition for the Electoral District of the (*state the place*) in which is Petitioner, and Respondent. Notice is hereby given that the above Petitioner has on the day of lodged at the office of the Registrar of the Court of Appeal, notice of an application to withdraw the Petition, on the following ground (*set it out*) And take notice that any person who might have been a Petitioner in respect of the said Election may, within ten days after the publication of this notice, give notice to the Registrar of the Court of Appeal, in writing, of his intention on the hearing to apply for leave to be substituted as a Petitioner.

A. B.,
Returning Officer.

XLVI.

Any person who might have been a Petitioner in respect of the Election to which the Petition relates, may, within ten days after such notice is published by the Returning Officer, give notice, in writing, signed by him or on his behalf, to the Registrar of the Court of Appeal of his intention to apply at the hearing of the application to withdraw, to be substituted for the Petitioner, but the want of such notice shall not defeat such application, if in fact made at the hearing of the application to withdraw the said Petition.

XLVII.

The time and place for hearing the application shall be fixed by a Judge of the Court of Appeal, and either before the Court of Appeal or before a Judge, as he may deem advisable, but such time shall not be less than a week after the notice of the intention to apply to be substituted for the Petitioner has been given to the Registrar of the Court of Appeal as hereinbefore provided; and notice of the time and place appointed for the hearing of such application shall be given to such person, if any, as shall have given notice to the Registrar of the Court of Appeal of such intention to apply to be substituted as the Petitioner, and otherwise in such manner and at such time as the Court or a Judge may direct.

XLVIII.

Notice of the abatement of a Petition, by death of the Petitioner or surviving Petitioner, under the said Act, shall be given by the party or person interested, and shall be published in the same manner as notice of an application to withdraw a Petition; and the time within which application may be made thereafter by any other person to the Court or a Judge, to be substituted as a Petitioner, shall be fourteen days after the notice of such abatement is published by the Returning Officer, or such other time as, upon consideration of any special circumstances, the Court or a Judge may allow.

XLIX.

If the Respondent dies or if the Legislative Assembly have resolved that his seat is vacant, or if he gives notice that he does not intend to oppose the Petition, any person entitled to be a Petitioner under the said Act in respect of the Election to which the Petition relates, may give notice of the fact in the Electoral District by causing such notice to be published in at least one newspaper published or circulating therein, if any, and by leaving a copy of such notice signed by him or on his behalf with the Returning Officer, and a like copy with the Registrar of the Court of Appeal.

L.

The manner and time of the Respondent giving notice to the Court that he does not intend to oppose the Petition, shall be by leaving notice thereof, in writing, at the office of the Registrar of the Court of Appeal, signed by the Respondent, or his agent, at any time, before the Judges on the rota, fix the day for the trial of the Election Petition. Such notice shall be in triplicate.

LI.

Upon such notice being left at the office of the Registrar of the Court of Appeal, he shall forthwith send one of the copies thereof by the post to the Petitioner or his Agent, and another to the Returning Officer who shall cause the same to be published in the Electoral District.

LII.

The time for applying to be admitted as a Respondent in either of the events provided for in the 97th section of the said Act and Rule 49, shall be within ten days after such notice is given as hereinbefore directed, or such other time as the Court or a Judge may allow.

LIII.

If notice of the Petitioner's intention to apply for leave to withdraw, or of the abatement of the said Petition by the death of the Petitioner or survivor of several Petitioners, or of the happening of any of the events mentioned in the 97th section of the said Act, be received after notice of trial shall have been given, and before the trial has commenced, the Court or a Judge may order a countermand of the notice of trial and a postponement of the case as prescribed by section 46 of the said Act.

LIV.

The order of the Court or a Judge for the payment of costs shall have the same force as an order made by the High Court of Justice or a Judge thereof, and shall be enforced in like manner.

LV.

Costs shall be taxed by one of the Taxing Officers upon the order of the Court or a Judge by which the costs are directed to be paid, and, when taxed, may be recovered by execution in the ordinary way, or in case there be money in the Bank available for such purpose, it may be applied *pro tanto* by order of the Court or a Judge, and execution shall only issue for the deficiency.

LVI.

The fees payable in stamps for proceedings under the Act, and these Rules, shall be the same as those payable, if any, for like proceedings according to the present practice of the Court of Appeal or of the High Court of Justice.

LVII.

All interlocutory questions and matters shall be heard and disposed of before a Judge of the Court of Appeal at Chambers, or before one of the Judges on the rota, who shall have the same jurisdiction over the proceedings under the Ontario Controverted Elections Act, as a Judge at Chambers in the ordinary proceedings of the Court of Appeal or the High Court.

LVIII.

The Court or a Judge shall have power to increase, enlarge, or abridge the time appointed by these Rules, or any Rules relating to time or fixed by any order enlarging time, for doing any act, or taking any proceedings, upon such

terms, if any, as the justice of the case may require; and such enlargement may be ordered or relief given, although the application for the same is not made until after the expiration of the time appointed or allowed, or until the same has begun to run.

LIX.

In these Rules words importing the singular number only shall include more persons or parties than one.

LX.

No proceeding under the Ontario Controverted Elections Act shall be defeated by any formal objection.

LXI.

Any Rule made or to be made in pursuance of the said Act shall be published by being put up in the office of the Registrar of the Court of Appeal.

LXII.

All Rules heretofore in force respecting the trial of Controverted Elections in the Province of Ontario are rescinded.

Dated the twenty-fourth day of September, A.D. 1894.

JOHN H. HAGARTY, C.J.O.
GEO. W. BURTON, J.A.
F. OSLER, J.A.
JAMES MACLENNAN, J.A.

(No. 55).

Report of the Master of Titles for the year 1894 Presented to the Legislature, 18th March, 1895. (*Not printed*).

RETURN

To an Order of the House of 7th March, 1894, for a Return showing what reductions have been made in the past ten years in the amounts payable by any Municipality to the Province in respect of drainage works, or advances made for such works, giving each Municipality separately with the amount of the original indebtedness and the amount of the reduction made with respect to it, and the authority for such reduction. And showing also, whether any of such Municipalities, and if so, which, are in arrear in respect of the payments to have been made on the reduced indebtedness and the amounts in arrear.

By Command,

J. M. GIBSON,
Secretary.

(Mr. Meredith.)

RETURN

RE DRAINAGE ASSESSMENT WORKS, ORDERED BY THE HOUSE OF ASSEMBLY IN 1894.

TOWNSHIP OF ALDBOROUGH.

ORIGINAL INDEBTEDNESS.

No. 1 drain, north	$3,400 95	
No. 1 " south	4,346 00	
		$7,746 95
By Order in Council, dated April 29th, 1889, amount transferred to Township of Dunwich, being their portion of work		2,480 00
		5,266 95

The Township of Aldborough for the first ten payments of $400\frac{27}{100}$ each on account of this advance, and by an Order in Council of May 3rd, 1887, was allowed, if the Township would pay up arrears, that a reduction of $1,000 be made off the amount due, also arrears of interest on overdue payments.

The amount remaining unpaid at January 1st, 1895, is	984 52

The Township is not in arrears.

TOWNSHIP OF MOORE.

Original amount advanced *re* Perch drain	$2,000 00
By Order in Council of December 2nd, 1887, this amount was reduced by	626 00
	$1,374 00

This amount is repayable in 22 annual instalments of $104.41 ; these have been paid up to and including January 1st, 1893.

Present value of loan at January 1st, 1893	796 31
Had the instalments of 1894 and 1895 been paid the present value of the loan would be	648 29

The Township is in arrears for 2 payments of $104.41 each, due January 1st, 1894, and January 1st, 1895.

TOWNSHIP OF RALEIGH.

Original amount advanced in 1875	$37,623 29
This amount is repayable in 22 annual instalments, each of	2,859 37

By Order in Council of September 17th, 1891, the last 5 payments were cancelled.

The Township is not in arrears.

The advance has been completely repaid.

TOWNSHIP OF SARNIA.

Original amount advanced	$43,470 65
By Order in Council of May 16th, 1884, the amount was reduced by	15,670 65
	$27,800 00
The balance of advance was repayable in 22 annual instalments of $2,112.80 each, all of which have been paid up to and including January 1st, 1895.	
The amount of principal now remaining outstanding is	11,944 69

TOWNSHIP OF SOMBRA.

Amount of original advance	$61,595 93
By Orders in Council of December 3rd, 1884, and March 5th, 1885, this amount was reduced by	19,095 93
	$42,500 00
By Order in Council of 15th March, 1886, amounts transferred to other Townships	3,130 00
	$39,370 00
This amount is repayable in 22 annual instalments of	2,992 00
The present value of outstanding payments is	28,440 00
The Township is not in arrears.	

RETURN

Certain Minutes of the Education Department and copies of Agreements made by the Education Department with certain publishers of text books used in Public and High Schools. Presented to the Legislative Assembly

By Command,

J. M. GIBSON,
Secretary.

COPY OF AN ORDER IN COUNCIL APPROVED BY HIS HONOR THE LIEUTENANT-GOVERNOR THE 17TH DAY OF SEPTEMBER, A.D. 1894.

Upon the recommendation of the Honorable the Minister of Education, the Committee of Council advise that, subject to the ratification of the same by resolution of the Legislative Assembly at the next session thereof, the accompanying contracts entered into by the firm of Hunter, Rose & Co. with the Minister of Education, representing Her Majesty, for the publication of the following text-books be approved of by Your Honor, namely :—

The Public School Euclid and Algebra,
The High School French Grammar,
The High School French Reader,
The High School Arithmetic,
High School Reader, with notes on the selections,
The Public School Writing Course.

Certified,

(Sgd.) J. LONSDALE CAPREOL,
Asst. Clerk Executive Council.

COPY OF AN ORDER IN COUNCIL APPROVED BY HIS HONOR THE LIEUTENANT-GOVERNOR THE 25TH DAY OF SEPTEMBER, A.D. 1894.

Upon the recommendation of the Honorable the Minister of Education, the Committee of Council advise that, subject to the ratification of the same by resolution of the Legislative Assembly at the next session thereof, the accompanying agreement between the Canada Publishing Company (Limited), publishers, of the City of Toronto, and Her Majesty the Queen, represented by the Honorable the Minister of Education for the Province of Ontario, on behalf of the Education Department of Ontario, respecting the publication of the Public School Arithmetic and Mensuration (enlarged edition), be approved of by Your Honor.

Certified,

(Sgd.) J. LONSDALE CAPREOL,
Asst. Clerk Executive Council.

COPY OF AN ORDER IN COUNCIL APPROVED BY HIS HONOR THE LIEUTENANT-GOVERNOR THE 23RD DAY OF NOVEMBER, A.D. 1894.

Upon the recommendation of the Honorable the Minister of Education, the Committee of Council advise that, subject to the ratification of the same by resolution of the Legislative Assembly, the accompanying agreement, dated 1st September, 1894, between the Canada Publishing Company (Limited), publishers, of the City of Toronto, and Her Majesty the Queen, represented by the Honorable the Minister of Education for the Province of Ontario, respecting the publication of the High School Drawing Course, be approved of by Your Honor.

Certified,

(Sgd.) J. LONSDALE CAPREOL,
Asst. Clerk Executive Council.

COPY OF AN ORDER IN COUNCIL APPROVED BY HIS HONOR THE LIEUTENANT-GOVERNOR THE 30TH DAY OF NOVEMBER, A.D. 1894.

Upon the recommendation of the Honorable the Minister of Education, the Committee of Council advise that the report of Mr. David Boyle, Curator of the Canadian Institute, respecting the aborigines of the Province of Ontario, be published as an appendix to the report of the said Minister, and that the sum of one hundred and fifty dollars ($150) be paid to Mr. Boyle for the preparation of the same, to be charged to "Unforseen and Unprovided."

Certified,

(Sgd.) J. LONSDALE CAPREOL,
Asst. Clerk Executive Council.

COPY OF A MINUTE OF THE DEPARTMENT OF EDUCATION DATED THE 1st DAY OF NOVEMBER, A.D. 1894.

Upon consideration of a report of the Honorable the Mininister of Education, dated the 26th day of October, A.D. 1894, the Department of Education doth hereby order that the certificate of Mr. John C. Reid, Public School Teacher, which was cancelled on the 3rd day of November, 1891, be restored to him, and that the Inspector of Public Schools for the County of Dufferin be notified accordingly.

Certified,

(Sgd.) J. LONSDALE CAPREOL,
Asst. Clerk Executive Council.

THIS INDENTURE made in triplicate this thirty-first day of January, in the year of our Lord One thousand eight hundred and ninety-four,

BETWEEN Messrs. Hunter, Rose & Company, of the City of Toronto, Province of Ontario, hereinafter called the Publishers of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the Publishers have made application to the Education Department of the Province of Ontario for the right to print and publish the Public School Euclid and Algebra for use in the Public Schools of Ontario.

And whereas the said Department of Education has approved of such application, and has agreed to grant the said Publishers the right to print and publish the said the Public School Euclid and Algebra, hereinafter called the Book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the Regulations in that behalf of the said Department of Education.

Now therefore this Indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said Publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say :

1. That the Publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions of the Regulations of the said Education Department respecting the printing and publication of text books, and also the terms and conditions hereinafter contained, and that each and every copy of each and every edition of the said book for use in the Province of Ontario shal in every particular be printed and published by the Publishers in strict conformity there with.

2. And that the Publishers shall submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereafter printed and published, for sale or use in the Province of Ontario, for the approval of such Department as to the mechanical execution of the presswork, binding and all other mechanical parts of the work, and that without such approval having been first had and obtained, no copy of any edition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said Publishers arising from, or liable to arise from, any edition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any edition, and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also to more effectually protect the public, the said Publishers shall submit or cause to be submitted to the Education Department for examination sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes, and other material proposed to be used by said Publishers in the printing and construction of the said book, together with a statement of the prices, weight, size, and other particulars necessary to judge of the relative quality of the different materials used or proposed to be used ; and the approval of the Education Department shall, before any work is proceeded with, be obtained is regard to the quality of the printing, and of the paper, and other material proposed to be used. And furthermore, after sanction has been given to the using of such material, or of such printing, presswork and binding, two sample copies at least of the book shall be submitted by said Publishers bound and finished in all respects *as proposed to be issued* by the said Publishers, and that without such approval first had and obtained, no work in regard to binding said book shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, sixty-six pounds to the ream of 500 sheets, measuring thirty inches by forty inches of good color and texture, and super calendered, or of such increased weight and improved quality as

may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal te the sample submitted to and approved of by the Education Department as aforesaid, to be full bound in twilled cloth and embossed in black on first page. Sections to be 16 pages each, and each section to be thread sewed to three tapes or strings; stitches and tapes on back of books to be covered with fine, strong, evenly-made mull, extending to within one-half inch from top and bottom of books, and overlapping one inch on each side, over the mull a strong piece of paper or pressing to he glued. Both tapes and strings, and mull to be glued to covers. End papers to be pasted on separately from first and last sections and to be equal to that used in books. Cloth for covers to be extra finished, twilled and heavy. Each and every part of the binding to be thoroughly done and durable. The maximum price not to exceed twenty-five cents and to be stamped on the cover. The strawboard for covers to be equal to sample copy submitted. At the option of the party of the second part, if the thread-sewing shall prove unsatisfactory the book shall be stitched with wire, and no departure from such specification shall be made without the sanction of the Education Department. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork, typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4. And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published, shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said Publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said Publishers shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said Department, but in case serious defects are pointed out by the Minister of Education to the Publishers in any edition published by said Publishers, and in case such edition is condemned by the Minister of Education as unfit for use in the schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education, be delivered by the said Publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say: It shall be uniform in size with the Ontario Reader, and shall contain 156 pages, exclusive of title-page, preface, table of contents and end papers. And that the said book shall be sold at retail prices not exceeding the following, that is to say, twenty-five cents per copy.

7. And that in order it may be the more easily recognized and ascertained that each and every copy of each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized but approved as to its mechanical execution, contents, and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title-page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words "Authorized by the Education Department for Ontario," or words to that effect, or shall place upon the title-page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title-page thereof. No advertisements of any

kind shall appear in any of the said books, or upon the covers of the said books, except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of such book of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of the said book in lots of the sale value of thirty-six dollars, computed at the said retail prices, the said publishers shall make a reduction of twenty-five per cent. and five per cent. in the price thereof, and in lots of the sale value of one hundred and twenty-five dollars, computed at the said retail prices, the said publishers shall make a reduction of twenty-five per cent. and five per cent. and five per cent. in the price thereof, and that the said publishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor.

10. And that the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours enter the warehouse and all other business premises or any part thereof of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of material or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall at any time consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced, the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the author's royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way, without the express consent in writing of the Minister of Education acting on behalf of the Education Department, assign any right conferred upon such publishers by this Indenture, and in case the publishers or any other person entitled to any right by virtue of this Indenture shall assign the same to any other person without the said consent, the right of the publishers or such other person under this Indenture shall, at the discretion of the Education Department, thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice, the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, provided the publishing is not thereby made more expensive; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the city of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said publishers.

15. And that the publishers shall have for two years from the first day of January, in the year of our Lord One thousand eight hundred and ninety-four, the sole right to print and publish within the said Province of Ontario, and Dominion of Canada, the said book. Provided always, however, that any other publisher may be permitted to publish the said book at any time after the expiration of the said period, by permission to be obtained from the Department of Education for Ontario, subject to such terms and conditions as the Minister of Education in his discretion may deem expedient.

16. And the publishers hereby agree that if the publishers or any of them if more persons than one are of the First Part hereto) deliberately disregard the terms of this Indenture, or fail to carry out the same in a matter of substance, the publishers shall absolutely forfeit all his or their rights under this Indenture, and the Minister of Education may apply to any division of the High Court of Justice for Ontario, to restrain the publisher from further printing, publishing or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have executed these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of five thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of two thousand five hundred dollars, conditioned for the due observance and fulfilment by the publishers of all the terms, conditions, clauses, agreements, obligations and covenants herein contained, and also of the regulations of the Education Department from time to time in force respecting text-books for use in the Public Schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this Indenture at any time after the expiration of five years from the date hereof, but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this Indenture as otherwise hereinbefore provided for.

19. To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as *of the first part* hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also understood and agreed between the parties hereto that this Indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements herein contained, the same shall be determined by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by counsel, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this Indenture.

21. It is understood and agreed between the parties hereto that this Indenture is entered into subject to the approval of His Honor the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this Indenture may, at the option of the said Minister, be exercised by any judge of a county court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this Indenture, and the said judge or refree shall, for the purpose of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are

herein reserved to the said Minister of Education in any other paragraph of this Indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

(Signed.) DAN. A. ROSE.

(Signed.) HUNTER, ROSE & CO. [seal.]

As to the signature of
GEO. W. ROSS,

(Signed.) GEO. W. ROSS. [seal.]

(Signed.) HENRY R. ALLEY.

This Indenture made in triplicate this first day of September, in the year of our Lord One thousand eight hundred and ninety-four,

Between The Canada Publishing Company (Limited), of the City of Toronto, Province of Ontario, hereinafter called the publishers of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the publishers have made application to the Education Department of the Province of Ontario for the right to print and publish The High School Drawing Course, comprising a series of 3 or 4 numbers, for use in the High Schools of Ontario.

And whereas the said Department of Education has approved of such application, and has agreed to grant the said publishers the right to print and publish the said The High School Drawing Course, comprising a series of 3 or 4 numbers, each and every copy of which is hereinafter called the Book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the regulations in that behalf of the said Department of Education.

Now therefore this Indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say :

1. That the publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions of the regulations of the said Education Department respecting the printing and publication of text-books, and also the terms and conditions hereinafter contained, and that each and every copy of each and every edition of the said book for use in the Province of Ontario, shall in every particular be printed and published by the publishers in strict conformity therewith.

2. And that the publishers shall, during the continuance of authorization of said book, submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereafter printed and published, for sale or use in the Province of Ontario, for the approval of such Department as to the mechanical execution of the presswork, binding, and all other mechanical parts of the work, and that without such approval having been first had and obtained, no copy of any edition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said publishers arising from, or liable

to arise from, any edition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any edition, and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also, to more effectually protect the public, the said publishers shall submit or cause to be submitted to the Education Department for examination, sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes, and other material proposed to be used by said publishers in the printing and construction of the said book, together with a statement of the prices, weight, size, and other particulars necessary to judge of the relative qualities of the different materials used or proposed to be used; and the approval of the Education Department shall, before any work is proceeded with, be obtained in regard to the quality of the printing, and of the paper and other material proposed to be used. And furthermore, after sanction has been given to the using of such material, and of such printing, presswork and binding, two sample copies at least of the book shall be submitted by said publishers bound and finished in all respects *as proposed to be issued* by the said publishers, and that without such approval first had and obtained, no work in regard to binding said book shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, weighing 116 pounds to the ream of 500 sheets, drawing paper, and measuring twenty-eight inches by forty-five inches, of good color and texture, or of such increased weight and improved quality as may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal to the sample submitted to and approved of by the Education Department as aforesaid. The covers for the said books shall be of calendered manilla, of good color and texture, size twenty-four inches by forty inches, and weighing 110 lbs. to the ream of 500 sheets. The book shall be strongly stitched with wire staples, by Thompson's wire-sewing machine, and no departure from such specification shall be made without the sanction of the Education Department. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork, typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4. And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said publishers shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said Department; but in case serious defects are pointed out by the Minister of Education to the publishers in any edition published by said publishers, and in case such edition is condemned by the Minister of Education as unfit for use in the schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education, be delivered by the said publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say, it shall measure nine by eleven inches and contain twenty-four pages, exclusive of covers. And

that the said book shall be sold at retail prices not exceeding the following, that is to say, the sum of ten cents for each copy.

7. And that in order it may be the more easily recognized and ascertained that each and every copy of each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized but approved as to its mechanical execution, contents, and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words "*Authorized by the Education Department for Ontario*," or words to that effect, or shall place upon the title page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title page thereof. No advertisements of any kind shall appear in any of the said books, or upon the covers of the said books, except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of such book of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of the said book in lots of the sale value of fifty dollars, computed at the said *retail* prices, the said publishers shall make a further reduction of five per cent. in the price thereof, and in lots of the sale value of one hundred dollars, computed at the said *retail* prices, the said publishers shall make a further reduction of five per cent. in the price thereof, and that the said publishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor as long as the book remains authorized.

10. And the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours enter the warehouse and all other business premises, or any part thereof, of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of material or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall, at any time after two years from the date hereof, consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced, the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the authors' royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way during the continuance of authorization without the express consent in writing of the Minister of Education acting on behalf of the Education Department, assign any right conferred upon such publishers by this Indenture, and in case the publishers or any other person entitled to any right by virtue of ths Indenture shall assign the same to any other person without the said consent the right of the publishers or such other person under this Indenture shall at the

discretion of the Education Department thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice, the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, providing the publishing is not thereby made more expensive; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the City of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said publishers.

15. And that the publishers shall have for two years from the first day of September, in the year of our Lord One thousand eight hundred and ninety-four, the sole right to print and publish within the said Province of Ontario, and Dominion of Canada, the said book. Provided always, however, that any other publisher may be permitted to publish the said book at any time after the expiration of the said period, by permission to be obtained from the Department of Education for Ontario, subject to such terms and conditions as the Minister of Education in his discretion may deem expedient.

16. And the publishers hereby agree that if the publishers or any of them (if more persons than one are of the first part hereto) deliberately disregard the terms of this Indenture, or fail to carry out the same in a matter of substance, the publishers shall absolutely forfeit all his or their rights under this Indenture, and the Minister of Education may apply to any Division of the High Court of Justice for Ontario to restrain the publishers from further printing, publishing or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have executed these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of five thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of two thousand five hundred dollars, conditioned for the due observance and fulfilment by the Publishers of all the terms, conditions, clauses, agreements, obligations and covenants herein contained, and also of the regulations of the Education Department from time to time in force respecting text-books for use in the Public Schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this Indenture at any time after the expiration of five years from the date hereof, but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this Indenture as otherwise hereinbefore provided for.

19. To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as *of the First Part* hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also understood and agreed between the parties hereto that this Indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements herein contained, the same shall be determined by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by counsel, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this Indenture.

21. It is understood and agreed between the parties hereto that this Indenture is entered into subject to the approval of His Honor the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this Indenture may, at the option of the said Minister, be exercised by any judge of a County Court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this Indenture, and the said Judge or referee shall, for the purpose of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are herein reserved to the said Minister of Education in any other paragraph of this Indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of
(Signed) CHARLES BUILDER.

(Signed) THE CANADA PUBLISHING CO. (Limited).
S. G. BEATTY, [seal.]
President.

As to the signature of
GEO. W. ROSS.
(Signed) HENRY R. ALLEY.

(Signed) GEO. W. ROSS [seal.]

This Indenture made in triplicate this first day of September in the year of our Lord One thousand eight hundred and ninety-four,

Between The Canada Publishing Company (Limited), of the City of Toronto, Province of Ontario, hereinafter called the publishers of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the publishers have made application to the Education Department of the Province of Ontario for the right to print and publish the Public School Arithmetic and Mensuration, by J. C. Glashan, Enlarged Edition, for use in the Public Schools of Ontario.

And whereas the said Department of Education has approved of such application and has agreed to grant the said publishers the right to print and publish the said Public School Arithmetic and Mensuration, by J. C. Glashan, Enlarged Edition, hereinafter called the book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the regulations in that behalf of the said Department of Education.

Now therefore this indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say :

1. That the publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions of the regulations of the said Education Department respecting the printing and publication of text books, and also the terms and conditions hereinafter contained, and that each and every copy of each and every edition of the said book for use in the Province of Ontario shall in every particular be printed and published by the publishers in strict conformity therewith.

2. And that the publishers shall during the continuance of authorization of said book submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereafter printed and published, for sale or use in the Province of Ontario, for the approval of such department as to the mechanical execution of the presswork, binding and all other mechanical parts of the work, and that without such apprroval having been first had and obtained, no copy of any edition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said publishers arising from, or liable to arise from, any edition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any edition, and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also to more effectually protect the public, the said publishers shall submit or cause to be submitted to the Education Department for examination sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes and other material proposed to be used by said publishers in the printing and construction of the said book, together with a statement of the prices, weight, size and other particulars necessary to judge of the relative quality of the different materials used or proposad to be used; and the approval of the Education Department shall, before any work is proceeded with, be obtained in regard to the quality of the printing, and of the paper and other material proposed to be used. And furthermore, after sanction has been given to the using of such material, or of such printing, presswork and binding, two sample copies at least of the book shall be submitted by said publishers bound and finished in all respects *as proposed to be issued* by the said publishers, and that without such approval first had and obtained, no work in regard to binding said books shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, sixty-six pounds to the ream of 500 sheets, measuring thirty inches by forty inches, of good color and texture, and super calendered, or of such increased weight and improved quality as may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal to the sample submitted to and approved of by the Education Department as aforesaid, to be full bound in twilled cloth, stiff covers, embossed in black on first and last pages. Sections to be 16 pages each, and each section to be wire-stitched to three tapes or strings, stitches and tapes on back of books to be covered with fine, strong, evenly-made mull, extending to within one-half inch from top and bottom of books, and overlapping one inch on each side; over the mull a strong piece of paper or pressing to be glued. Both tape and strings and mull to be glued to covers. End papers to be pasted on separately from first and last sections, and to be of same quality as that used in books. Cloth for covers to be extra finished, twilled, heavy. Each and every part of the binding to be thoroughly done and durable. The maximum price not to exceed twenty five cents, and to be stamped on the cover. At the option of the party of the second part, if the wire stitching shall prove unsatisfactory, the publishers shall sew the book with thread instead of wire. And no departure from such specification shall be made without the sanction of tho Education Department. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork, typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4 And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published, shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said publishers shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said Department, but in case serious defects are pointed out by the Minister of Education to the publishers in any edition published by said publishers, and in case such edition is condemned by the Minister of Education as unfit for use in the schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education, be delivered by the said publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say: It shall be uniform in size with "Ontario readers," and shall contain 210 pages, exclusive of end papers and covers. And that the said book shall be sold at retail prices not exceeding the following, to wit: Twenty-five cents per copy.

7. And that in order it may be the more easily recognized and ascertained that each and every copy of each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized, but approved, as to its mechanical execution, contents, and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words, "*Authorized by the Education Department for Ontario*," or words to that effect, or shall place upon the title-page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title-page thereof. No advertisements of any kind shall appear in any of the said books, or upon the covers of the said books, except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of such book of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of the said book in lots of the sale value of thirty-six dollars, computed at the said *retail* prices, the said publishers shall make a reduction of 25 per cent. and 5 per cent. in the price thereof, and in lots of the sale value of one hundred and twenty-five dollars, computed at the said *retail* prices, the said publishers shall make a reduction of 25 per cent. + 5 + 5 per cent. in the price thereof, and that the said publishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor as long as the book remains authorized.

10. And that the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours enter the warehouse and all other business premises or any part thereof of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of material or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall at any time after two years from the date hereof consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced, the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of

the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the author's royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way during the continuance of authorization without the express consent in writing of the Minister of Education, acting on behalf of the Education Department, assign any right conferred upon such publishers by this Indenture, and in case the publishers or any other person entitled to any right by virtue of this Indenture shall assign the same to any other person without the said consent the right of the publishers or such other person under this Indenture shall at the discretion of the Education Department thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, provided the publishing is not thereby made more expensive; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the City of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said publishers.

15. And that the publishers shall have for two years from the first of September in the year of our Lord one thousand eight hundred and ninety-four, the sole right to print and publish within the said Province of Ontario and Dominion of Canada the said book. Provided always, however, that any other publisher may be permitted to publish the said book at any time after the expiration of the said period, by permission to be obtained from the Department of Education for Ontario, subject to such terms and conditions as the Minister of Education in his discretion may deem expedient, having due regard to the original cost, author's royalties, and the sales.

16. And the publishers hereby agree that if the publishers or any of them (if more persons than one are of the first part hereto) deliberately disregard the terms of this Indenture, or fail to carry out the same in the matter of substance, the publishers shall absolutely forfeit all his or their rights under this Indenture, and the Minister of Education may apply to any Division of the High Court of Justice for Ontario to restrain the publishers from further printing, publishing, or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have executed these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of five thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of two thousand five hundred dollars, conditioned for the due observance and fulfilment by the publishers of all the terms, conditions, clauses, agreements, obligations and covenants herein contained, and also of the regulations of the Education Department from time to time in force respecting text-books for use in the Public Schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this Indenture at any time after the expiration of five years from the date hereof, but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this Indenture as otherwise hereinbefore provided for.

19 To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as of the first part hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also undrstood and agreed between the parties hereto that this Indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements herein contained, the same shall be considered by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by counsel, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this Indenture.

21. It is understood and agreed between the parties hereto that this Indenture is entered into subject to the approval of His Honour the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this Indenture, may, at the option of the said Minister, be exercised by any Judge of a County Court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this Indenture, and the said judge or referee shall, for the purpose of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are herein reserved to the said Minister of Educaion in any other paragraph of this Indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

(Signed) CHARLES BUILDER.

(Signed) THE CANADA PUBLISHING CO., (Limited).
S. G. BEATTY, [seal.]
President.

As to the signature of
GEO. W. ROSS.
(Signed) H. M. WILKINSON.

(Signed) GEO. W. ROSS. [Seal.]

This Indenture made in triplicate this ninth day of March in the year of our Lord One thousand eight hundred and ninety-four.

Between Messrs. Hunter Rose & Company of the City of Toronto, Province of Ontario, hereinafter called the publishers of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the publishers have made application to the Education Department of the Province of Ontario for the right to print and publish The Public School Writing Course, comprising seven separate books, numbers 1, 2, 3, 4, 5 boys, 5 girls, and 6, for use in the public schools of Ontario.

And whereas the said Department of Education has approved of such application, and has agreed to grant the said publishers the right to print and publish the said Public School Writing Course, numbers 1, 2, 3, 4, 5 boys, 5 girls, and 6 hereinafter called the Book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the regulations in that behalf of the said Department of Education.

Now therefore this Indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say :

1. That the publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions of the regulations of the said Education Department respecting the printing and publication of text books, and also the terms and conditions hereinafter contained, and that each and every edition of the said book for use in the Province of Ontario shall in every particular be printed and published by the publishers in strict conformity therewith.

2. And that the publishers shall submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereafter printed and published, for sale or use in the Province of Ontario, for the approval of such Department as to the mechanical execution of the presswork, binding and other mechanical parts of the work, and that without such approval having been first had and obtained, no copy of any addition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said publishers arising from, or liable to arise from, any addition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any addition, and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also to more effectually protect the public, the said publishers shall submit or cause to be submitted to the Education Department for examination sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes, and other material proposed to be used by said publishers in the printing and construction of the said book, together with a statement of the prices, weight, size and other particulars necessary to judge of the relative quality of the different materials used or proposed to be used ; and the approval of the Education Department shall, before any work is proceeded with, be obtained in regard to the quality of the printing, and of the paper, and other material proposed to be used. And furthermore, after saction has been given to the using of such material, or of such printing, presswork and binding, two sample copies at least of the book shall be submitted by said publishers bound and finished in all respects *as proposed to be issued* by the said publishers, and that without such approval first had and obtained, no work in regard to binding said book shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, sixty pounds to the ream of 500 sheets, measuring 22½ inches by 28¾ inches of good color and texture, and super calendered, or of such increased weight and improved quality as may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression ; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal to the sample submitted to and approved of by the Education Department as aforesaid. The paper for the covers shall be Manilla paper of good color and texture, measuring 18¼ inches by 28¾ inches, and weighing sixty pounds to the ream of 500 sheets, and no departure from such specification shall be made without the sanction of the Education Department. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork,

typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4. And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published, shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said publishers shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said Department, but in case serious defects are pointed out by the Minister of Education to the publishers in any edition published by said publishers, and in case such edition is condemned by the Minister of Education as unfit for use in the schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education, be delivered by the said publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say: Numbers 1, 2, 3, 4, 5 "Boys" and 5 "Girls" shall contain 24 pages each exclusive of cover, and shall measure 9 x 7 inches each respectively. Number six shall contain 32 pages exclusive of cover, and shall measure 8 x 10 inches. And that the said book shall be sold at retail prices not exceeding the following: Numbers 1, 2, 3, 4, 5 "Boys" and 5 "Girls," six cents each respectively to 1st July, 1894 On and after July 1st, 1894, the retail price shall be five cents per copy for said numbers, subject, however, to the provisions of clause 11 of this indenture. Number 6 shall be ten cents per copy, subject also to the provisions of clause 11 of this indenture.

7. And that in order it may be the more easily recognized and ascertained that each and every copy of each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized but approved as to its mechanical execution, contents, and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words "*Authorized by the Education Department for Ontario,*" or words to that effect, or shall place upon the title page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title page thereof. No advertisements of any kind shall appear in any of the said books, or upon the covers of the said books, except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of any of such book or any combination thereof of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of any of the said book or any combination thereof in lots of the sale value of one hundred dollars, computed at the said *retail* prices, the said publishers shall make a further reduction of ten per cent. in the price thereof, and in lots of the sale value of five hundred dollars, computed at the said *retail* prices, the said publishers shall make a further reduction of five per cent. in the price thereof, and that the said publishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor.

10. And that the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours

enter the warehouse and all other business premises or any part thereof of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of material or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall at any time consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced, the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the author's royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way, without the express consent in writing of the Minister of Education acting on behalf of the Education Department, assign any right conferred upon such publishers by this indenture, and in case the publishers or any other person entitled to any right by virtue of this indenture shall become insolvent or shall assign the same to any other person without the said consent, the right of the publishers or such other person under this indenture shall, at the discretion of the Education Department, thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice, the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, provided the publishing is not thereby made more expensive; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the City of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said publishers.

15. And that the publishers shall have the right to print and publish within the said Province of Ontario, and Dominion of Canada, the said book. Provided always, however, that any other publisher may be permitted to publish the said book at any time by permission to be obtained from the Department of Education for Ontario, subject to an author's royalty of five per cent. on retail price and such consideration as may be allowed publishers in the discretion of the Minister of Education, and subject to such terms and conditions as the Minister of Education in his discretion may deem expedient. Nothing herein contained shall be deemed to interfere with the right of the Education Department to authorize more than one series of writing-books, as may be deemed expedient.

16. And the publishers hereby agree that if the publishers or any of them (if more persons than one are of the first part hereto) deliberately disregard the terms of this indenture, or fail to carry out the same in a matter of substance, the publishers shall absolutely forfeit all his or their rights under this indenture, and the Minister of Education may apply to any Division of the High Court of Justice for Ontario to restrain the publishers from further printing, publishing or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have exe-

cuted these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of two thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of one thousand five hundred dollars, conditioned for the due observance and fulfilment by the publishers of all the terms, conditions, clauses, agreements and obligations and covenants herein contained, and also of the regulations of the Education Department from time to time in force respecting text-books for use in the public schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this indenture at any time after the expiration of five years from the date hereof, but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this indenture as otherwise hereinbefore provided for.

19. To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as of the first part hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also understood and agreed between the parties hereto that this indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements herein contained, the same shall be determined by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by counsel, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this indenture.

21. It is understood and agreed between the parties hereto that this indenture is entered into subject to the approval of His Honour the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this indenture may, at the option of the said Minister, be exercised by any judge of a County Court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this indenture, and the said judge or referee shall, for the purposes of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are herein reserved to the said Minister of Education in any other paragraph of this indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

(Signed) H. M. WILKINSON,

as to the signature of HUNTER, ROSE & CO.

(Signed) HUNTER, ROSE & CO., [seal.]

GEO. MACLEAN ROSE.

As to the signature of GEO. W. ROSS,

(Signed) HENRY R. ALLEY.

GEO. W. ROSS. [seal.]

THIS INDENTURE made in triplicate this ninth day of March, in the year of our Lord One thousand eight hundred and ninety-four,

BETWEEN Messrs. Hunter, Rose & Company, of the City of Toronto, Province of Ontario, hereinafter called the publishers of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province, of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the publishers have made application to the Education Department of the Province of Ontario for the right to print and publish the High School Reader with Notes on the Selections for use in the High Schools of Ontario.

And whereas the said Department of Education has approved of such application, and has agreed to grant the said publishers the right to print and publish the said High School Reader with Notes on the Selections, hereinafter called the book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the regulations in that behalf of the said Department of Education.

Now therefore this indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say :

1. That the publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions of the regulations of the said Education Department respecting the printing and publication of text books, and also the terms and conditions hereinafter contained, and that each and every copy of each and every edition of the said book for use in the Province of Ontario shall in every particular be printed and published by the publishers in strict conformity therewith.

2. And that the publishers shall submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereafter printed and published, for sale or use in the Province of Ontario, for the approval of such Department as to the mechanical execution of the press-work, binding and all other mechanical parts of the work, and that without such approval having been first had and obtained, no copy of any edition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said publishers arising from, or liable to arise from, any edition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any edition, and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also to more effectually protect the public, the said publishers shall submit or cause to be submitted to the Education Department for examination sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes, and other material proposed to be used by said publishers in the printing and construction of the said book, together with a statement of the prices, weight, size, and other particulars necessary to judge of the relative quality of the different materials used or proposed to be used ; and the approval of the Education Department shall, before any work is proceeded with, be obtained in regard to the quality of the printing, and of the paper, and other material proposed to be used. And furthermore, after sanction has been given to the using of such material, or of such printing, presswork and binding, two sample copies at least of the book shall be submitted by said publishers bound and finished in all respects *as proposed to be issued* by the said publishers, and that without such approval first had and obtained, no work in regard to binding said book shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, eighty pounds to the ream of 480 sheets, toned same shade as that of Ontario Readers, measur-

ing thirty inches by forty-two inches of good color and texture, and super calendered, or of such increased weight and improved quality as may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal to the sample submitted to and approved of by the Education Department as aforesaid, that is to say: To be full bound in twilled cloth and embossed same pattern as Fourth Reader on first and last pages. Sections to be 16 pages each and each section to be hand sewed to three tapes or strings, stitches and tapes on back of books to be covered with fine, strong, evenly-made mull, extending to within one-half inch from top and bottom of books and overlapping one inch on each side; over the mull a strong piece of paper or pressing to be glued. Both tapes and strings and mull to be glued to cover. End papers to be pasted on separately from first and last sections, and to be the same quality as that used in books. Cloth for covers to be extra finished, twilled, heavy and color of Ontario Readers. Each and every part of the binding to be thoroughly done and durable. The maximum price not to exceed fifty cents, and to be stamped on cover. Strawboard to be twenty-five boards to bundle of fifty pounds. At option of party of the second part, the publishers shall, upon notification in writing, bind the book with wire instead of thread, and no departure from such specification shall be made without the sanction of the Education Department. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork, typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4. And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published, shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said publisher shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said department, but in case serious defects are pointed out by the Minister of Education to the publishers in any edition published by said publishers, and in case such edition is condemned by the Minister of Education as unfit for use in the schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education, be delivered by the said publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say: The length and breadth of the printed pages and of the covers shall be the same as those of the Fourth Reader of the Ontario Series, and shall contain 512 pages, exclusive of end papers and covers. And that the said book shall be sold at retail pries not exceeding the following: fifty cents per copy.

7. And that in order it may be the more easily recognized and ascertained that each and every copy of each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized but approved as to its mechanical execution, contents and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words "*Authorized by the Education Department for Ontario*," or words to that effect, or shall place upon the title page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title page thereof. No advertisements of any kind shall appear in any of the said books, or upon the covers of the said books, except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of such book of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of the said book in lots of the sale value of one hundred dollars, computed at the said retail price, the said publishers shall make a further reduction of five per cent. in the price thereof, and in lots of the sale value of five hundred dollars, computed at the said retail prices, the said publishers shall make a further reduction of five per cent. in the price thereof, and that the said publishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor.

10. And that the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours enter the warehouse and all other business premises or any part thereof of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of material or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall at any time consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the authors' royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way, without the express consent in writing of the Minister of Education acting on behalf of the Education Department, assign any right conferred upon such publishers by this Indenture, and in case the publishers or any other person entitled to any right by virtue of this Indenture shall become insolvent or shall assign the same to any other person without the said consent the right of the publishers or such other person under this Indenture shall at the discretion of the Education Department thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice, the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, provided the publishing is not thereby made more expensive; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the City of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said publishers.

15. And that the publishers shall have the right to print and publish within the said Province of Ontario and Dominion of Canada the said book. Provided always,

however, that any other publisher may be permitted to publish the said book at any time by permission to be obtained from the Department of Education for Ontario, subject to such terms and conditions as the Minister of Education in his discretion may deem expedient.

16. And the publishers hereby agree that if the publishers or any of them (if more persons than one are of the first part hereto) deliberately disregard the terms of this Indenture, or fail to carry out the same in a matter of substance, the publishers shall absolutely forfeit all his or their rights under this Indenture, and the Minister of Education may apply to any Division of the High Court of Justice for Ontario to restrain the publishers from further printing, publishing or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have executed these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of two thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of one thousand five hundred dollars, conditioned for the due observance and fulfilment by the publishers of all the terms, conditions, clauses, agreements, obligations and covenants herein contained, and also of the regulations of the Education Department from time to time in force respecting textbooks for use in public schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this Indenture at any time after the expiration of five years from the date hereof, but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this Indenture as otherwise hereinbefore provided for.

19. To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as *of the first part* hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also understood and agreed between the parties hereto that this Indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements herein contained, the same shall be determined by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by council, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this Indenture.

21. It is understood and agreed between the parties hereto that this Indenture is entered into subject to the approval of His Honor the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this Indenture may, at the option of the said Minister, be exercised by any Judge of a County Court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this Indenture, and the said Judge or Referee shall, for the purpose of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are herein reserved to the said Minister of Education in any other paragraph of this Indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

(Signed) HUNTER, ROSE & Co. [seal.]

(Signed) H. M. WILKINSON,
as to signature of
HUNTER, ROSE & Co.

GEO. MACLEAN ROSE.

(Signed) GEO. W. ROSS. [seal.]

As to the signature of
GEO. W. ROSS,

(Signed) HENRY R. ALLEY.

(Copy.)

This Indenture made in triplicate this ninth day of March in the year of our Lord one thousand eight hundred and ninety-four,

Between Messrs. Hunter, Rose and Company of the City of Toronto, Province of Ontario, hereinafter called the publishers, of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the publishers have made application to the Education Department of the Province of Ontario for the right to print and publish the High School Arithmetic for use in High Schools, Collegiate Institutes and Senior Forms of Public Schools in Ontario.

And whereas the said Department of Education has approved of such application, and has agreed to grant the said publishers the right to print and publish the said the High School Arithmetic, hereinafter called the book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the regulations in that behalf of the said Department of Education.

Now therefore this Indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say:

1. That the publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions of the regulations of the said Education Department respecting the printing and publication of text books, and also the terms and conditions hereinafter contained, and that each and every copy of each and every edition of the said book for use in the Province of Ontario shall in every particular be printed and published by the publishers in strict conformity therewith.

2. And that the publishers shall submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereafter printed and published, for sale or use in the Province of Ontario, for the approval of such Department as to the mechanical execution of the presswork, binding and all other mechanical parts of the work, and that without such approval having been first had and obtained, no copy of any edition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said publishers arising from, or liable to arise from, any edition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any edition,

and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also to more effectually protect the public, the said publishers shall submit or cause to be submitted to the Education Department for examination sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes, and other material proposed to be used by said publishers in the printing and construction of the said book, together with a statement of the prices, weight, size, and other particulars necessary to judge of the relative quality of the different materials used or proposed to be used; and the approval of the Education Department shall, before any work is proceeded with, be obtained in regard to the quality of the printing, and of the paper, and other material proposed to be used. And furthermore, after sanction has been given to the using of such material, or of such printing, presswork and binding, two sample copies at least of the book shall be submitted by said publishers bound and finished in all respects *as proposed to be issued* by the said publishers, and that without such approval first had and obtained, no work in regard to binding said book shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, sixty six pounds to the ream of 500 sheets, measuring thirty inches by forty inches, of good color and texture, and super calendered, or of such increased weight and improved quality as may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal to the sample submitted to and approved of by the Education Department as aforesaid. To be full bound in stiff cloth covers embossed in black on first and last pages. Sections to be 16 pages each and each section to be sewed with thread to three tapes or strings. Stitches and tapes on back of books to be covered with fine, strong, evenly-made mull, extending to within one-half inch from top and bottom of books and overlapping one inch on each side; over the mull a strong piece of paper or pressing to be glued. Both tapes and strings and mull to be glued to covers. End papers to be pasted on separately from first and last sections, and to be fully equal to that used in books. Cloth for covers to be extra finished, twilled and heavy. Each and every part of the binding to be thoroughly done and durable. The maximum price not to exceed sixty cents, and to be stamped on cover.

At the option of the party of the second part if the thread stitching shall prove unsatisfactory, the book shall be wire stitched to the satisfaction of the party of the second part, and no departure from such specification shall be made without the sanction of the Education Department. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork, typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4. And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published, shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said publishers shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said Department, but in case serious defects are pointed out by the Minister of Education to the publishers in any edition published by said publishers, and in case such edition is condemned by the Minister of Education as unfit for use in the schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education,

be delivered by the said publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say: It shall contain 394 pages, exclusive of title page, table of contents, preface and end papers, and the pages shall respectively measure 3½ inches by 5⅞ inches of printed matter, with good margins. And that the said book shall be sold at retail prices not exceeding the following: that is to say, sixty cents per copy.

7. And that in order it may be the more easily recognized and ascertained that each and every copy of each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized but approved as to its mechanical execution, contents and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words "*Authorized by the Education Department for Ontario*," or words to that effect or shall place upon the title page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title page thereof. No advertisements of any kind shall appear in any of the said books, or upon the covers of the said books, except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of such books of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of the said book in lots of the sale value of eighty-six dollars and forty cents, computed at the said retail prices, the said publisher shall make a further reduction of ten per cent. in the price thereof, and in lots of the sale value of five hundred dollars, computed at the said retail prices, the said publishers shall make a further reduction of five per cent. in the price thereof, and that the said publishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor.

10. And that the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours enter the warehouse and all other business premises or any part thereof of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of materials or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall at any time consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced, the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the authors' royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way, without the express consent in

writing of the Minister of Education acting on behalf of the Education Department, assign any right conferred upon such publishers by this indenture, and in case the publisher or any other person entitled to any right by virtue of this indenture shall become insolvent or shall assign the same to any other person without the said consent, the right of the publishers or such other person under this indenture shall at the discretion of the Education Department thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice, the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, provided the publishing is not thereby made more expensive; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the City of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said publishers.

15. And that the publishers shall have the right to print and publish within the said Province of Ontario, and Dominion of Canada, the said book. Provided always, however, that any other publisher may be permitted to publish the said book at any time after the expiration of the said period, by permission to be obtained from the Department of Education for Ontario, subject to an author's royalty of ten per cent. and such consideration as may be allowed to publishers in the discretion of the Minister of Education and subject to such terms and conditions as the Minister of Education in his discretion may deem expedient.

16. And the publishers hereby agree that if the publishers or any of them (if more persons than one are of the first part hereto) deliberately disregard the terms of this indenture, or fail to carry out the same in a matter of substance, the publishers shall absolutely forfeit all his or their rights under this indenture, and the Minister of Education may apply to any Division of the High Court of Justice for Ontario to restrain the publishers from further printing, publishing or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have executed these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of two thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of one thousand five hundred dollars, conditioned for the due observance and fulfilment by the publishers of all the terms, conditions, clauses, agreements, obligations and covenants herein contained, and also of the regulations of the Education Department from time to time in force respecting text-books for use in the Public Schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this indenture at any time after the expiration of five years from the date hereof, but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this indenture as otherwise hereinbefore provided for.

19. To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as *of the First Part* hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also understood and agreed between the parties hereto that this indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements

herein contained, the same shall be determined by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by counsel, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this indenture.

21. It is understood and agreed between the parties hereto that this indenture is entered into subject to the approval of His Honor the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this indenture may, at the option of the said Minister, be exercised by any judge of a county court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this indenture, and the said judge or referee shall, for the purpose of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are herein reserved to the said Minister of Education in any other paragraph of this indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of } (Signed) HUNTER, ROSE & CO. [seal.]

(Signed) H. M. WILKINSON, GEO. MACLEAN ROSE.

As to signature of H., R. & Co.

As to the signature of GEO. W. ROSS,

(Signed), HENRY R. ALLEY. (Signed) GEO. W. ROSS. [seal]

This Indenture made in triplicate this ninth day of March, in the year of our Lord One thousand eight hundred and ninety-four,

Between Messrs. Hunter, Rose & Company, of the city of Toronto, Province of Ontario, hereinafter called the publishers, of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the publishers have made application to the Education Department of the Province of Ontario for the right to print and publish the High School French Reader for use in the High Schools of Ontario.

And whereas the said Department of Education has approved of such application, and has agreed to grant the said publishers the right to print and publish the said the the High School French Reader, hereinafter called the book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the regulations in that behalf of the said Department of Education.

Now therefore this indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say:

1. That the publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions and of the regulations of the said Education Department respecting the printing and publication of text books, and also the terms and conditions hereinafter contained, and that each and every copy of each and every edition of the said book for use in the Province of Ontario shall in every particular be printed and published by the publishers in strict conformity therewith.

2. And that the publishers shall submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereinafter printed and published, for sale or use in the Province of Ontario, for the approval of such Department as to the mechanical execution of the presswork, binding and all other mechanical parts of the work, and that without such approval having been first had and obtained, no copy of any edition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said publishers arising from, or liable to arise from, any edition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any edition, and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also to more effectually protect the public, the said publishers shall submit or cause to be submitted to the Education Department for examination sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes, and other material proposed to be used by said publisher in the printing and construction of the said book, together with a statement of the prices, weight, size, and other particulars necessary to judge of the relative quality of the different materials used or proposed to be used; and the approval of the Education Department shall, before any work is proceeded with, be obtained in regard to the quality of the printing, and of the paper, and other material proposed to be used. And furthermore, after sanction has been given to the using of such material, or of such printing, presswork and binding, two sample copies at least of the book shall be submitted by the said publishers, bound and finished in all respects *as proposed to be issued* by the said publishers, and that without such approval first had and obtained, no work in regard to binding said book shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, sixty-six pounds to the ream of 500 sheets, measuring thirty inches by forty inches, of good color and texture, and super calendered, or of such increased weight and improved quality as may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal to the sample submitted to and approved by the Education Department as aforesaid; to be bound in stiff cloth covers embossed in black on first and last pages. Sections to be sixteen pages each, and each section to be wire stitched to three tapes or strings; stitches and tapes on back of books to be covered with fine, strong, evenly-made mull, extending to within one-half inch from top and bottom of books and overlapping one inch on each side; over the mull a strong piece of paper or pressing to be glued; both tapes and strings and mull to be glued to covers; end papers to be pasted on separately from first and last sections, and to be fully equal to that used in books; cloth for covers to be extra finished, twilled and heavy; each and every part of the binding to be thoroughly done and durable. The maximum price not to exceed sixty cents each, and to be stamped on the cover. At the option of the party of the second part, if the wire stitching shall prove unsatisfactory, the book shall be sewed with thread to the satisfaction of the party of the second part, and no departure from such specification shall be made without the sanction of the Education Depart-

ment. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork, typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4. And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published, shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said publishers shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said Department, but in case serious defects are pointed out by the Minister of Education to the publishers in any edition published by said publishers, and in case such edition is condemned by the Minister of Education as unfit for use in the schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education, be delivered by the said publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say: It shall contain 256 pages, exclusive of end papers, and shall be of the same size as the Ontario Reader series. And that the said book shall be sold at retail prices not exceeding the following: sixty cents per copy.

7. And that in order it may be the more easily recognized and ascertained that each and every copy or each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized but approved as to its mechanical execution, contents, and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title-page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words "*Authorized by the Education Department for Ontario*," or words to that effect, or shall place upon the title-page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title-page thereof. No advertisements of any kind shall appear in any of the said books, or upon the covers of the said books, except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of such book of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of the said book in lots of the sale value of eighty-six dollars and forty cents, computed at the said retail prices, the said publishers shall make a further reduction of ten per cent. in the price thereof, and in lots of the sale value of five hundred dollars, computed at the said retail prices, the said publishers shall make a further reduction of five per cent. in the price thereof, and that the said publishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor.

10. And that the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours enter the warehouse and all other business premises or any part thereof of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of material or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall at any time consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced, the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the authors' royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor to be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way, without the express consent in writing of the Minister of Education acting on behalf of the Education Department, assign any right conferred upon such publishers by this Indenture, and in case the publishers or any other person entitled to any right by virtue of this Indenture shall become insolvent or shall assign the same to any other person without the said consent the right of the publisher or such other person under this Indenture shall at the discretion of the Education Department thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice, the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, provided the publishing is not thereby made more expensive; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the City of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said, publishers.

15. And that the publishers shall have the right to print and publish within the said Province of Ontario, and Dominion of Canada, the said book. Provided always however, that any other publisher may be permitted to publish the said book at any time after the expiration of the said period, by permission to be obtained from the Department of Education for Ontario, subject to an author's royalty of ten per cent. and such consideration as may be allowed to publishers in the discretion of the Minister of Education and subject to such terms and conditions as the Minister of Education in his discretion may deem expedient.

16. And the publishers hereby agree that if the publishers or any of them (if more persons than one are of the first part hereto) deliberately disregard the terms of this Indenture, or fail to carry out the same in a matter of substance, the publishers shall absolutely forfeit all his or their rights under this Indenture, and the Minister of Education may apply to any Division of the High Court of Justice for Ontario to restrain the publishers from further printing, publishing or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have executed these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of two thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of one thousand five hundred dollars, conditioned for the due observance and fulfilment by the publishers of all the terms, conditions, clauses, agreements, obligations and covenants herein contained, and also of the regulations of the

Education Department from time to time in force respecting text books for use in the public schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this Indenture at any time after the expiration of five years from the date hereof, but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this Indenture as otherwise hereinbefore provided for.

19. To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as *of the first part* hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also understood and agreed between the parties hereto that this Indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements herein contained, the same shall be determined by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by counsel, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this Indenture.

21. It is understood and agreed between the parties hereto that this Indenture is entered into subject to the approval of His Honor the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this Indenture may, at the option of the said Minister, be exercised by any Judge of a County Court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this Indenture, and the said judge or referee shall, for the purpose of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are herein reserved to the said Minister of Education in any other paragraph of this Indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

(Signed) H. M. WILKINSON,

as to signature of HUNTER, ROSE & CO.

(Signed) HUNTER, ROSE & CO. [seal.]

GEO. MACLEAN ROSE. [seal.]

As to the signature of GEO. W. ROSS.

(Signed) HENRY R. ALLEY.

(Signed) GEO. W. ROSS. [seal.]

THIS INDENTURE made in triplicate this ninth day of March, in the year of Our Lord One thousand eight hundred and ninety-four.

BETWEEN Messrs. Hunter, Rose & Company, of the City of Toronto, Province of Ontario, hereinafter called the publishers of the first part, and Her Majesty the Queen, represented herein by the Honorable the Minister of Education for the Province of Ontario, acting for the Education Department of Ontario, of the second part.

Whereas the publishers have made application to the Education Department of the Province of Ontario for the right to print and publish the High School French Grammar, by W. H. Fraser, B.A., and J. Squair, B.A., for use in the High Schools of Ontario.

And whereas the said Department of Education has approved of such application, and has agreed to grant the said publishers the right to print and publish the said High School French Grammar, hereinafter called the book, subject to the covenants and conditions hereinafter contained, and to the terms and conditions of the regulations in that behalf of the said Department of Education.

Now therefore this Indenture witnesseth, that in consideration of the premises and of the sum of one dollar of lawful money of Canada, the receipt whereof is hereby acknowledged, the said publishers do hereby covenant with Her Majesty the Queen, her successors and assigns in manner following, that is to say :

1. That the publishers shall from time to time and at all times observe, perform and fulfil in respect of the said book each and every of the terms and conditions of the regulations of the said Education Department respecting the printing and publication of text books, and also the terms and conditions hereinafter contained, and that each and every copy of each and every edition of the said book for use in the Province of Ontario shall in every particular be printed and published by the publishers in strict conformity therewith.

2. And the publishers shall submit or cause to be submitted to the said Education Department sample copies of each and every edition of the said book to be hereafter printed and published, for sale or use in the Province of Ontario, for the approval of such Department as to the mechanical execution of the press-work, binding and all other mechanical parts of the work, and that without such approval having been first had and obtained, no copy of any edition thereof shall be sold or disposed of for use in the said Province of Ontario. And furthermore, in order to avoid causing loss to the said publishers arising from, or liable to arise from, any edition of the said book not being approved of by the Education Department, owing to any serious defect or defects in any edition, and on that account condemned by the Education Department, and forbidden to be sold or issued to the schools or to the public, and also to more effectually protect the public, the said publishers shall submit or cause to be submitted to the Education Department for examination sample sheets of the different forms of the book about to be printed, and specimens of the ink, paper, millboard, strawboard, cloth, mull, tapes, and other material proposed to be used by said publishers in the printing and construction of the said book, together with a statement of the prices, weight, size, and other particulars necessary to judge of the relative quality of the different materials used or proposed to be used ; and the approval of the Education Department shall, before any work is proceeded with, be obtained in regard to the quality of the printing, and of the paper, and other material proposed to be used. And furthermore, after sanction has been given to the using of such material, or of such printing, presswork and binding, two sample copies at least of the book shall be submitted by said publishers bound and finished in all respects *as proposed to be issued* by the said publishers, and that without such approval first had and obtained, no work in regard to binding said book shall be proceeded with.

3. And that the paper to be used in each and every edition of the said book, and every copy thereof for use in the Province of Ontario shall be equal in quality to the sample prescribed by the said Education Department, to wit, of good quality, sixty-six pounds to the ream of 500 sheets, measuring thirty inches by forty inches, of good color and texture, and super calendered, or of such increased weight and improved quality as

may be required by the Education Department, provided the cost of the same shall not exceed the cost of the sample herein prescribed, and no inferior quality of paper shall under any pretext whatsoever be used. The presswork and ink shall be first-class throughout, and shall be such as to produce together with the plates a clear and distinct impression; and the stitching and binding of each and every edition of the said book, and the material used therein shall be equal to the sample submitted to and approved of by the Education Department as aforesaid. To be full bound in stiff cloth covers embossed in back on first and last pages. Sections to be sixteen pages each, and each section to be wire stitched to three tapes or strings. Stitches and tapes on back of books to be covered with fine, strong, evenly-made mull, extending to within one-half inch from top and bottom of books, and overlapping one inch on each side; over the mull a strong piece of paper or pressing to be glued. Both tapes and strings and mull to be glued to covers. End papers to be pasted on separately from first and last sections and to be fully equal to that used in books. Cloth for covers to be extra finished, twilled and heavy. Each and every part of the binding to be thoroughly done and durable. The maximum price not to exceed seventy-five cents, and to be stamped on cover. At the option of the party of the second part if the wire stitching should prove unsatisfactory, the book shall be sewed with thread to the satisfaction of the party of the second part, and no departure from such specification shall be made without the sanction of the Education Department. And no copy of the said book which does not in all particulars comply with the foregoing provisions in regard to paper, presswork, typography, ink and binding shall be sold or disposed of for use in the Province of Ontario.

4. And that the said sample copies to be furnished as hereinbefore provided for shall remain on file in the said Education Department, and each and every copy of each and every edition published, shall in all respects be equal to the sample copy so furnished to and on file in the said Department.

5. And that in case the Minister of Education points out to the said publishers any defect or defects in the sample copies furnished to the said Department as aforesaid, but not deemed by him of sufficient importance to cause him to withhold his approval from such edition, then in such case the said publishers shall in the next following edition or issue to that in which said defect shall have been pointed out, correct the same to the satisfaction of the said Department, but in case serious defects are pointed out by the Minister of Education to the publishers in any edition published by said publishers, and in case such edition is condemned by the Minister of Education as unfit for use in schools or for sale to the public, the condemned edition shall be withdrawn from sale for use in the Province of Ontario, and shall, if required by the Minister of Education, be delivered by the said publishers into the custody of the Education Department, unless an arrangement satisfactory to the Minister be made for culling out any defective portion or portions, or the matter is in some other way adjusted.

6. And that the said book shall be of the size following, that is to say: It shall contain 400 pages, exclusive of end papers, and shall be of the same size as the Ontario Reader series, and that the said book shall be sold at retail prices not exceeding the following: seventy-five cents per copy.

7. And that in order it may be the more easily recognized and ascertained that each and every copy of each and every edition of the said book to be published and in use in the said Province of Ontario is not only authorized but approved as to its mechanical execution, contents, and otherwise, by the said Education Department, the publishers shall cause to be printed upon the title-page of each and every copy of each and every edition of the said book the name of the firm by which such book is published, and the words "*Authorized by the Education Department for Ontario*," or words to that effect, or shall place upon the title-page or cover of each copy of the said book the official stamp of the Education Department.

8. And that the retail price of each and every copy of each and every edition of the said book shall be printed on the cover or title-page thereof. No advertisements of any kind shall appear in any of the said books, or upon the covers of the said books except such as are approved by the Education Department.

9. And that for the better securing the retail sale of the said book at a price not exceeding that above set forth as the maximum retail price, the publishers shall make the sale to any purchaser buying quantities of such book of one dozen and upwards at one time at prices at least twenty-five per cent. lower than the said prescribed retail prices on the usual terms of sale, and that to purchasers of the said book in lots of the sale value of one hundred and eight dollars, computed at the said *retail* prices, the said publishers shall make a further reduction of ten per cent. in the price thereof, and in lots of the sale value of five hundred dollars computed at the said *retail* prices, the said publishers shall make a further reduction of five per cent. in the price thereof and that the said pub ishers shall and will from time to time and at all times keep on hand a sufficient quantity of copies of the said book to supply all demands of the public and trade therefor.

10. And that the Minister of Education, or any person by him appointed in writing for that purpose, shall and may from time to time and at any time during business hours enter the warehouse and all other business premises or any part thereof of the publishers, for the purpose of inspecting any and every edition or issue of such authorized book and every copy thereof, and shall have a right to take sample sheets or other samples of material or sample copies of said books for the purpose of examination, whenever he thinks proper so to do.

11. And that in case the said Education Department shall at any time consider that the retail price and scale of discounts heretofore mentioned of the said book should be reduced, the Minister of Education may arrange, as in his discretion he deems proper, after hearing the statements of the publishers, a reduced retail price and scale of discounts. Provided always that the said reduced retail price and reduced scale of discounts shall allow to the said publishers, in the opinion of the Minister of Education, a fair margin of profit, consideration being duly taken of the original cost of preparing the book, the authors' royalties, the cost of publishing an edition, and the current sales, and provided that the change in prices aforesaid shall not take effect until six months after notice in writing has been given to the publishers by the Education Department.

12. And that the said publishers will not print or publish, nor cause nor authorize to be printed or published, nor be in any way accessory to the printing or publishing of any edition or copy or copies of the said book in the United States or anywhere else without the limits of the Province of Ontario, to be sold within the said Province of Ontario.

13. And that the publishers shall not in any way, without the express consent in writing of the Minister of Education acting on behalf of the Education Department, assign any right conferred upon such publishers by this Indenture, and in case the publishers or any other person entitled to any right by virtue of this Indenture shall become insolvent or shall assign the same to any other person without the said consent, the right of the publishers or such other person under this Indenture shall at the discretion of the Education Department thereupon cease and become forfeit and absolutely at an end.

14. And that upon the Minister of Education giving to the said publishers six months' notice, the Education Department may require the alteration of the contents of the said book, and may alter any of the specifications hereinbefore contained, provided the publishing is not thereby made more expensive ; but that no change shall be made by the publishers in the contents of the said book, nor any addition thereto, nor any omission therefrom, nor any notes or appendices thereto, nor any other change in the subject matter thereof, without the consent in writing of the said Education Department first had and obtained. The notice hereinbefore provided for may be given by publication thereof in two issues of any newspaper published in the City of Toronto and in the *Ontario Gazette*, or by delivery of the same to the said publishers.

15. And that the publishers shall have the right to print and publish within the said Province of Ontario and Dominion of Canada, the said book. Provided always, however, that any other publisher may be permitted to publish the said book at any time after the expiration of the said period, by permission to be obtained from the Department of Education for Ontario, subject to an author's royalty of 10 per cent. and such consideration as

may be allowed to publishers in the discretion of the Minister of Education and subject to such terms and conditions as the Minister of Education in his discretion may deem expedient.

16. And the publishers hereby agree that if the publishers or any of them (if more persons than one are of the first part hereto) deliberately disregard the terms of this Indenture, or fail to carry out the same in a matter of substance, the publishers shall absolutely forfeit all his or their rights under this Indenture, and the Minister of Education may apply to any division of the High Court of Justice for Ontario to restrain the publishers from further printing, publishing or selling any copies of the said book.

17. Provided and it is hereby expressly agreed that no edition or copy of the said book shall be printed or published by the publishers until the publishers shall have executed these presents and shall have executed to Her Majesty the Queen a bond in the penal sum of two thousand dollars, with two sureties approved by the Minister of Education, each bound in the sum of one thousand, five hundred dollars, conditioned for the due observance and fulfilment by the publishers of all the terms, conditions, clauses, agreements, obligations and covenants herein contained, and also of the regulations of the Education Department from time to time in force respecting text books for use in the public schools.

18. It is hereby expressly declared and agreed that the Minister of Education may, on giving the publishers one year's notice in writing, terminate this Indenture at any time after the expiration of five years from the date hereof but this provision shall not affect the right of the party of the second part to rescind and declare forfeited this Indenture as otherwise hereinbefore provided for.

19. To prevent any possibility of misapprehension, it is hereby expressly declared and agreed that in case there are more persons than one named as of the first part hereto, the breach by any one of such persons of any covenant, term or condition herein contained, whether such covenant, term or condition is affirmative or negative, shall be a breach for which all such persons shall be liable. It is also understood and agreed between the parties hereto that this Indenture contains the whole agreement with respect to the publication of the said book, and that the same is not and has not been and cannot be altered or varied by any verbal statements or explanations made between or by any of the parties hereto.

20. And that should any difference of opinion arise between the parties hereto as to the construction to be put upon any of the terms, conditions and agreements herein contained, the same shall be determined by the Attorney-General of Ontario, after giving the parties hereto an opportunity of presenting their views, in person or by counsel, and such determination by the said Attorney-General shall be final and conclusive and binding upon the parties to this Indenture.

21. It is understood and agreed between the parties hereto that this Indenture is entered into subject to the approval of His Honor the Lieutenant-Governor of the Province of Ontario in Council.

22. It is understood and agreed by the party hereto of the first part that the powers which the Minister of Education has the right to exercise under paragraphs 11 and 15 of this Indenture may, at the option of the said Minister, be exercised by any Judge of a County Court or other official referee holding the office or appointed thereto under the 124th section of the Judicature Act, and to be selected and named by the said Minister from time to time as there is occasion for the purposes of this Indenture, and the said judge or referee shall, for the purpose of doing complete justice in the premises, try such issues and settle such questions as the said Minister shall submit. But nothing herein contained shall be understood to affect or impair any other right or powers which are herein reserved to the said Minister of Education in any other paragraph of this Indenture.

In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

(Signed) HUNTER, ROSE & Co. [seal.]

GEO. MACLEAN ROSE.

(Signed) H. M. WILKINSON,
as to signature of
HUNTER, ROSE & Co.

(Signed) GEO. W. ROSS. [seal.]

As to the signature of
GEO. W. ROSS,

(Signed) HENRY R. ALLEY.

RETURN

Showing the Fees and Emoluments of the Registrars of Deeds for the Province of Ontario for the year 1894. With which are contrasted receipts of the same nature in the years 1892 and 1893.

Presented to the Legislative Assembly,

By Command,

J. M. GIBSON,
Secretary.

STATEMENT of Returns forwarded to the office of the Provincial Secretary of all
1894, made in accordance with the provisions of the Registry Act, 1893,
years 1892

SCHEDULE

No. of registration division.	Registration division.	Name.	1. No. of municipalities in its division.	2. No. of instruments registered, 1894.	2a. No. of instruments registered, 1893.	3. No. of instruments on 31st Dec., 1894. Uncopied.	3. Uncompared.	4. Fees earned and not received.	5. Special For special work not covered by next column.
								$ c.	$ c.
1	Algoma	R. A. Lyon	16	719	664	....	....	....	. . ....
2	Brant	T. S. Stenson	7	1,953	1,803	46	4	.....	.....
3	Bruce	Donald Sinclair	27	3,248	3,367	6	6	1,005 13	125 00
4	Carleton	T. J. Coffey	12	2,010	1,954	6	....	353 01	... .
5	Dufferin	William McKim	8	1,653	1,558	46	76	.....	1 25
6	Dundas	Thomas Mcdonald	8	976	947	....	....	2 00	.. ..
7	Durham, E.	George C. Ward	5	722	1,189	....	....	....	.....
8	Durham, W	J. W. McLaughlin	5	620	638	4	2	108 01	....
9	Elgin	Jas. H. Coyne	13	3,140	2,969	....	....	40 25	.....
10	Essex	J. Wallace Askin	23	4,057	4,117	....	....	.....	.....
11	Frontenac	J. D. Thompson	18	1,294	1,268	....	....	271 91	.....
12	Glengarry	John Simpson	7	916	784	....	10	429 63	60 00
13	Grenville	Patrick McCrea	9	1,025	1,081	....	....	62 50	.....
14	Grey, N	Robert McKnight	12	2,130	2,101	11	20	723 55	.....
15	Grey, S	Thomas Lauder	10	1,870	1,819	9	9	.....	.....
16	Haldimand	William Parker	14	1,263	1,140	....	....	161 60	.....
17	Haliburton	E. C. Young	9	227	250	9	9	....	....
18	Halton	Donald Campbell	9	1,299	1,146	....	....	110 30	.....
19	Hastings	Henry W Day	30	2,635	2,386	147	150	4,359 05	....
20	Huron	Jas. Dickson	24	4,006	3,878	26	26	325 25	.....
21	Kent	Peter D. McKellar	18	3,779	3,637	49	49	322 85	.....
22	Kingston, C.	J. P. Gildersleeve	1	784	688	2	2	.....	.....
23	Lambton	A. McLean	20	4,003	4,041	269	....	314 74	....
24	Lanark, N	John Menzies	8	605	642	1	....	29 65	.....
25	Lanark, S	Jas. Bell	10	1,240	1,092	....	....	160 00	.....
26	Leeds	Wilmot H. Cole	15	2,069	2,040	....	....	410 29	.....
27	Lennox & Addington	Stephen Gibson	17	1,271	1,097	....	....	24 55	.....
28	Lincoln	Jas. G. Currie	14	1,675	1,655	5	....	295 40	.....
29	London, C.	Wm. C. L. Gill	1	1,640	1,556	7	....	.....	.....
30	Manitoulin	D. R. Springer / W. C. Noble (Deputy)	32	414	313	....	....	9 65	71 90
31	Middlesex, N. & E.	John Waters	14	2,290	2,273	58	69	86 77	. .....
32	Middlesex, W	Stephen Blackburn	9	1,110	1,179	11	....	175 00	....
33	Muskoka	John E. Lount	27	1,021	1,125	45	45	127 00	....
34	Nipissing	William Doran	52	612	507	...	....	....	..... .
35	Norfolk	A. J. Donly	13	2,063	1,933	. .	....	4 00	....

*From

the Fees and Emoluments received by the Registrars of Ontario for the year section 117, with which are contrasted receipts of the same nature in the and 1893.

"A."

receipts. For work connected with transfer of instruments paid for by county treasurer.	6. Gross amount of fees exclusive of column 5, 1894.	7. Gross amount of fees, 1893.	8. Gross amount of fees, 1892.	9. Total amount of fees and emoluments earned by registrar during the year by virtue of his office.	10. Disbursements during the year in connection with the office of registrar.	11. Amount belonging to municipality.	12. Whether paid to treasurer, and when.	13. Amount paid municipality last year.	14. Net income of registrar.	No. of registration division.
$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.		$ c	$ c.	
.....	1,550 16	1,342 89	1,326 38	2,350 16	505 00	34 51	Paid to Provincial Sec'y	.....	1,845 16	1
.....	3,123 95	2,957 50	3,090 30	3,123 95	950 30	74 80	Jan. 9, 1895..	45 75	2,173 65	2
.....	5,466 45	5,412 05	5,466 80	5,591 45	1,154 58	983 22	.....	956 03	3,212 91	3
.....	3,955 40	3,732 90	3,637 95	3,955 40	1,351 11	286 62	Jan. 10, 1895	219 87	2,604 29	4
.....	3,174 85	3,053 10	3,239 20	3,174 85	959 07	84 97	" 15, 1895	60 62	2,130 81	5
.....	1,475 55	1,426 40	1,479 50	1,475 55	607 30	.....	.....	.....	866 75	6
.....	1,294 80	1,265 50	1,289 16	1,294 80	550 00	.....	.....	.....	744 80	7
.....	1,097 75	1,154 70	1,052 41	1,097 75	500 00	.....	.....	.....	597 75	8
.....	5,147 27	4,620 75	5,206 29	4,957 15	1,841 48	823 64	Jan. 15, 1895..	560 38	3,194 63	9
.....	7,628 00	7,059 68	7,844 89	7,628 00	4,013 47	2,332 37	" 15, 1895..	1,861 17	3,614 53	10
.....	2,202 00	2,116 90	2,262 50	2,202 00	361 73	.....	.....	.....	1,839 87	11
.....	1,605 40	1,360 85	1,412 64	1,665 40	385 00	.....	.....	.....	1,280 40	12
.....	1,737 15	1,680 60	1,742 60	1,737 15	820 00	.....	.....	.....	917 15	13
.....	3,623 95	3,599 25	3,591 20	3,623 95	1,184 13	187 18	Jan. 12, 1895..	179 87	2,438 82	14
.....	3,008 41	2,841 05	3,254 47	3,008 41	917 00	73 60	" 11, 1895..	34 10	2,091 36	15
.....	2,279 49	2,127 45	2,318 25	2,279 49	1,030 00	.....	.....	.....	1,249 49	16
.....	818 74	501 06	311 65	818 74	60 00	.....	.....	.....	758 74	17
.....	2,059 60	2,059 00	2,140 05	2,059 60	919 97	.....	.....	.....	1,139 63	18
.....	4,809 05	4,266 65	4,943 70	4,809 05	2,141 07	654 50	Jan. 14, 1895	406 66	2,667 98	19
.....	6,334 85	5,925 05	5,776 80	6,334 85	2,623 50	1,417 42	" 15, 1895..	1,212 52	2,293 93	20
12 80	6,058 80	6,142 80	6,801 65	6,071 10	2,443 45	1,279 15	" 14 & 18,'95	1,321 40	2,348 50	21
.....	1,262 64	1,118 33	1,134 16	1,262 64	633 02	.....	.....	.....	629 62	22
.....	6,375 05	6,771 25	7,674 77	6,375 05	2,345 06	1,437 53	Jan. 7, 1895..	1,635 63	2,592 46	23
165 30	963 30	1,016 40	1,016 10	1,127 60	230 00	.....	.....	.....	897 60	24
.....	2,004 70	1,730 90	1,741 30	2,004 70	720 85	.....	.....	.....	1,383 85	25
.....	3,480 39	3,295 52	3,460 47	3,480 39	1,144 00	224 00	.....	199 10	2,112 00	26
.....	1,974 40	1,733 50	2,037 60	1,974 70	316 50	.....	.....	.....	1,658 20	27
.....	3,084 24	3,236 90	3,380 10	3,084 24	527 91	67 44	Jan 15, 1895..	97 38	2,556 33	28
.....	2,629 54	2,856 05	2,678 87	2,626 54	756 85	12 60	Jan. 9, 1895..	35 60	1,870 19	29
.....	449 75	530 45	467 25	521 65	14 18	.....	.....	.....	557 47	30
.....	3,664 90	3,904 85	3,629 55	3,664 90	*290 08	.....	.....	.....	*1,239 27	31
.....	1,918 95	2,035 05	2,214 40	1,918 95	545 00	.....	.....	.....	1,373 95	32
.....	1,780 10	2,121 60	1,681 40	1,780 10	525 00	.....	.....	.....	1,255 10	33
.....	990 40	741 20	579 10	990 40	57 27	.....	.....	.....	933 13	34
.....	3,796 80	3,533 55	3,655 30	3,796 80	1,180 00	239 04	.....	160 06	2,377 76	35

July 16th.

STATEMENT of Returns forwarded to the office of the Provincial Secretary of 1894.—

No. of registration division.	Registration division.	Name.	1. No. of municipalities in its division.	2. No. of instruments registered, 1894.	2a. No. of instruments registered, 1893.	3. No. of instruments on 31st Dec. 1894. Uncopied.	3. Uncompared.	4. Fees earned and not received.	5. Special: For special work not covered by next column.
								$ c.	$ c.
36	Northumberland, E.	A. E. Mallory	9	1,900	1,110	330	230	277 31	
37	Northumberland, W.	F. W. Field	5	639	615	69	69	390 79	
38	Ontario	John Harry Perry	17	1,968	2,050	17	17		
39	Ottawa	Alexander Burritt	1	2,237	2,369	20			
40	Oxford	George R. Patullo	16	3,080	3,069	105	105	125 00	85 55
41	Parry Sound	Thos. Kennedy	44	770	659			266 84	
42	Peel	Kenneth Chisolm	8	1,382	1,239			39 08	
43	Perth, N.	D. D. Hay	9	1,934	1,768		15	200 00	
44	Perth, S.	Patrick Whelihan	7	932	992	38	62		
45	Peterborough	Bernard Morrow	20	1,720	1,904			143 00	
46	Prescott	John Higgonson	9	1,219	1,041	30	30		90 15
47	Prince Edward	Walter McKenzie	9	1,161	1,033	229	229	92 98	
48	Rainy River	Frank J. Apjohn	3	327	268	14	14		
49	Renfrew	Andrew Irving	26	2,013	2,120				
50	Russell	Jas. Keays	6	839	800				
51	Simcoe	Samuel Lount	26	4,143	4,119	18	18	1,129 98	
52	Stormont	John C. Alguire	5	1,063	1,025	4	8	293 65	
53	Thunder Bay	J. M. Munro	25	491	636	1	11		
54	Toronto, E.	Peter Ryan	1	4,454	5,310	12	40		
55	Toronto, W.	Charles Lindsey	1	4,336	5,239	10	10		
56	Victoria	Chas. D. Barr	18	1,663	1,784			221 77	1,048 88
57	Waterloo	Isaac Master	13	2,511	2,075				
58	Welland	James E. Morin	15	2,351	2,240	13	13	167 30	
59	Wellington, N.	John Anderson	11	1,539	1,510	87	135	581 25	
60	Wellington, S. & C.	M. Higginbotham	11	1,711	1,707	20		75 95	
61	Wentworth	Lewis Springer / John Ridout	10	4,422	4,332	104	104		
62	York, E. W.	John T. Gilmour	13	2,984	3,438	23		1 35	
63	York, N.	Jas. J. Pearson	10	1,281	1,206				

all the Fees and Emoluments received by the Registrars of Ontario for the year *Continued.*

For work connected with transfer of instruments paid for by county treasurer.	6. Gross amount of fees exclusive of column 5, 1894.	7. Gross amount of fees, 1893.	8. Gross amount of fees, 1892.	9. Total amount of fees and emoluments earned by registrar during the year by virtue of his office.	10. Disbursements during the year in connection with the office of registrar.	11. Amount belonging to municipality.	12. Whether paid to treasurer, and when.	13. Amount paid municipality last year.	14. Net income of registrar.	No. of registration division.
$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.		$ c.	$ c.	
.....	2,445 45	2,417 85	2,447 30	2,445 45	1,624 62	.....	.....	.....	820 83	36
.....	1,285 45	1,225 85	1,266 40	1,285 45	432 60	.....	.....	.....	852 85	37
.....	3,378 85	3,443 85	3,323 60	3,378 85	852 37	125 77	Jan. 15, 1895..	138 77	2,523 83	38
.....	4,338 75	4,512 80	3,783 55	4,338 75	1,596 17	435 25	" 10, 1895..	506 40	2,742 58	39
.....	5,410 81	5,185 50	5,197 30	5,410 81	1,533 06	955 40	" 15, 1895..	900 50	2,880 12	40
.....	1,703 30	1,425 75	1,402 80	1,703 30	371 60	.....	.....	.....	1,064 86	41
.....	2,449 70	2,223 50	2,600 35	2,449 70	1,016 00	.....	.....	.....	1,433 70	42
.....	3,021 55	2,815 80	2,726 90	3,021 55	1,178 30	54 31	Jan. 9, 1895..	31 58	1,788 94	43
.....	1,464 85	1,617 60	1,519 85	1,464 85	741 90	.....	.....	.....	722 95	44
.....	3,422 00	3,885 85	3,955 35	3,422 00	1,328 12	134 40	Jan. 14, 1895..	265 75	1,913 54	45
.....	1,845 25	1,665 60	1,929 35	1,845 25	405 50	.....	.....	.....	1,439 75	46
.....	1,825 70	1,619 05	1,621 09	1,825 70	800 00	.....	.....	.....	1,025 70	47
.....	619 90	622 35	611 65	619 90	680 00	.....	.....	.....	700 00	48
.....	3,192 66	3,479 55	3,101 70	3,192 66	850 00	88 53	Jan 11, 1895..	146 00	2,254 13	49
.....	1,449 80	1,418 50	1,400 22	1,449 80	400 00	.....	.....	.....	1,049 80	50
.....	7,723 41	7,926 70	7,992 30	7,723 41	3,104 02	2,269 03	Jan. 15, 1895..	2,261 62	2,350 36	51
.....	1,888 25	1,735 70	1,799 30	1,888 25	800 25	.....	.....	.....	1,088 00	52
.....	1,075 90	1,432 20	1,480 30	1,075 90	378 15	.....	.....	.....	697 75	53
.....	9,129 45	10,872 85	12,926 65	9,129 45	3,865 76	2,814 72	.....	3,686 42	2,448 97	54
.....	8,725 35	10,857 25	14,771 95	8,725 35	3,352 59½	2,612 67½	.....	.....	2,734 08	55
.....	3,171 05	3,353 95	3,375 30	3,171 05	1,137 45	84 20	Jan. 15, 1895..	120 79	1,949 40	56
.....	3,579 75	3,350 50	3,701 00	3,579 75	1,329 45	173 92	" 15, 1895..	120 10	2,076 38	57
.....	5,169 45	5,626 35	5,582 95	5,619 45	1,531 11	1,089 05	" 5, 1895..	1,144 47	2,831 99	58
.....	2,745 20	2,696 95	2,742 15	2,745 20	932 26	24 51	.....	19 70	1,812 94	59
.....	2,736 70	2,888 55	3,055 35	2,736 70	732 60	23 67	.....	38 85	1,976 68	60
.....	8,337 95	8,157 45	8,170 53	8,337 95	4,656 12	2,418 97	Jan. 15, 1895..	2,328 72	3,681 83	61
.....	6,131 20	7,013 85	8,947 35	6,131 20	3,120 73	162 79	" 4, 1895	1,756 92	2,845 98	62
.....	2,262 70	2,129 50	2,353 40	2,262 70	859 75	.....	.....	.....	1,402 95	63

STATEMENT of the Returns forwarded to the office of the Provincial Secretary of all SCHEDULE

No. of registration division.	Registration division.	No. of patents.	Fees therefor.	No. of deeds.	Fees therefor.	No. of mortgages.	Fees therefor.	No. of discharges of mortgages.	Fees therefor.	No. of wills.
			$ c.		$ c.		$ c.		$ c.	
1	Algoma	61	*	376	576 75	164	285 90	76	42 60	12
2	Brant	1	1 55	609	936 05	530	909 50	501	258 55	57
3	Bruce	5	7 00	1,198	1,808 60	845	1,413 75	748	379 85	106
4	Carleton	3	4 20	675	1,069 35	616	1,152 50	479	311 40	45
5	Dufferin	.....	.....	576	902 25	477	840 80	396	201 50	25
6	Dundas	.....	.....	322	479 25	277	456 90	260	133 8	32
7	Durham, E	.....	.....	320	495 25	193	335 30	97	59 50	35
8	Durham, W	.....	.....	207	317 55	150	260 95	138	88 75	41
9	Elgin	2	2 80	990	1,539 95	909	1,464 50	831	419 70	70
10	Essex	14	22 75	1,375	2,122 30	1,089	1,838 85	894	509 90	60
11	Frontenac	10	14 25	496	725 30	344	536 05	241	162 35	44
12	Glengarry	.....	.....	289	423 25	239	393 01	222	111 00	53
13	Grenville	3	4 63	356	563 15	287	507 10	205	103 70	53
14	Grey, N	2	2 70	787	1,124 75	525	957 20	551	284 20	47
15	Grey, S	4	5 60	652	952 55	496	847 47	463	232 05	55
16	Haldimand	3	4 55	412	640 95	352	558 20	304	152 20	47
17	Haliburton	1	1 40	128	198 25	43	320 99	21	10 50	4
18	Halton	1	1 40	376	586 55	353	546 55	261	131 30	51
19	Hastings	9	12 60	932	1,531 20	717	1,189 95	575	277 90	81
20	Huron	1	1 40	1,338	1,962 25	1,136	1,841 15	1,093	554 45	107
21	Kent	1	1 40	1,272	1,836 55	1,119	1,820 36	888	445 40	95
22	Kingston	4	6 05	234	350 20	201	319 75	174	110 30	30
23	Lambton	.....	.....	1,472	2,185 05	1,12	1,736 55	993	501 70	75
24	Lanark, N	.....	.....	225	351 60	185	326 00	140	70 00	17
25	Lanark, S	2	2 80	388	572 10	361	697 20	301	150 80	45
26	Leeds	10	15 95	735	1,129 36	524	917 20	509	257 90	105
27	Lennox and Addington	.....	.....	401	593 50	321	502 90	306	157 05	37
28	Lincoln	.....	.....	564	892 04	494	781 85	345	210 40	49
29	London, C	.....	.....	508	764 50	526	747 50	434	209 60	51
30	Manitoulin	135	.....	149	214 10	64	106 25	36	18 00	..
31	Middlesex, N. and E	.....	.....	737	1,106 50	671	988 75	566	289 30	126
32	Middlesex W	.....	.....	386	574 70	324	572 55	288	144 00	27
33	Muskoka	28	39 65	442	645 25	186	324 95	123	65 50	20
34	Nipissing	.....	.....	267	407 25	181	338 15	94	47 00	2
35	Norfolk	2	2 80	735	1,152 75	578	1,016 85	473	236 50	50
36	Northumberland, E	3	4 50	472	726 65	290	548 05	320	178 05	30
37	Northumberland, W	.....	.....	243	380 60	150	272 00	119	70 45	23
38	Ontario	1	1 40	652	1,016 35	537	933 55	449	226 05	89
39	Ottawa	11	16 00	727	1,133 20	731	1,346 95	554	278 15	44
40	Oxford	..	.....	1,018	1,570 40	868	1,487 95	719	439 25	119
41	Parry Sound	21	29 40	377	601 20	171	298 75	103	56 25	9
42	Peel	1	1 40	377	584 65	385	673 60	330	168 00	34
43	Perth, N	.....	.....	685	983 55	538	847 80	507	261 60	50
44	Perth, S	...	.....	282	419 00	211	377 40	251	127 00	37
45	Peterborough	3	4 20	542	977 70	556	942 50	362	187 10	56
46	Prescott	.....	.....	512	683 80	316	491 65	263	131 50	36
47	Prince Edward	.....	.....	396	578 45	318	514 60	265	131 50	47
48	Rainy River	.....	.....	123	178 75	99	185 15	30	15 00	1
49	Renfrew	3	4 20	878	1,308 35	509	811 38	433	217 75	52
50	Russell	.....	..	376	546 55	243	407 55	161	92 70	10
51	Simcoe	4	5 60	1,484	2,173 74	1,180	2,064 65	934	486 45	92
52	Stormont	.....	.....	351	520 10	301	489 65	249	124 50	48
53	Thunder Bay	.....	.....	273	495 65	99	198 80	68	40 45	2
54	Toronto, E	10	39 85	963	1,662 90	1,173	2,571 30	1,037	555 30	3
55	Toronto, W	2	2 95	1,235	2,032 95	960	2,028 05	954	490 30	85
56	Victoria	.....	.....	565	855 85	495	865 55	381	190 80	35
57	Waterloo	.....	.....	835	1,186 65	682	1,014 60	628	323 25	74
58	Welland	6	9 90	856	1,411 95	557	956 55	434	266 45	69
59	Wellington, N	6	8 40	603	911 95	389	629 55	353	185 00	53
60	Wellington, S. and C	2	....	564	827 30	446	728 75	378	185 30	92
61	Wentworth	1	1 55	1,156	1,849 55	1,384	2,184 30	1,670	542 25	143
62	York, E and W	.....	.....	1,080	1,850 65	665	1,364 30	648	359 85	66
63	York, N	.....	.....	462	724 90	356	620 70	288	171 10	45

* These are only returns.

Fees and Emoluments received by Registrars of Ontario for the year 1894.—*Con.*
"B."

Fees therefor.	No. of leases.	Fees therefor.	No. of abstracts.	Fees therefor.	No. of searches.	Fees therefor.	No. of mechanics' liens.	Fees therefor.	No. of all other instruments.	Fees therefor.	No. of registration division.
$ c.		$ c		$ c.		$ c.		$ c.		$ c.	
25 46	1	1 40	165	244 55	443	203 55	1	25	89	139 20	1
111 50	5	9 60	138	123 30	1,450	379 20	15	4 20	235	355 20	2
226 65	20	40 55	1,438	750 95	829	208 00	9	2 25	317	426 35	3
97 70	7	13 45	465	455 20	945	368 60	2	1 65	183	330 55	4
60 40	7	15 70	495	495 50	757	260 35	5	1 25	167	246 85	5
63 70	7	10 25	70	72 30	432	146 65	4	1 00	74	110 45	6
68 80	2	4 30	112	89 90	263	136 30	.....	.....	75	80 10	7
70 95	2	2 95	83	106 25	290	101 86	.....	.....	82	123 00	8
184 20	14	22 60	168	246 25	1,901	487 60	1	25	323	484 00	9
125 75	260	396 75	453	756 80	2,419	1,076 85	33	9 90	332	522 45	10
75 40	37	67 35	158	146 45	1,411	304 60	3	1 00	119	169 05	11
77 60	7	12 60	173	164 85	862	225 70	....	.....	106	141 44	12
89 15	8	14 05	138	151 65	478	132 90	.....	.....	110	150 35	13
102 95	8	17 15	548	458 60	1,068	284 80	9	2 25	202	277 85	14
97 75	13	20 35	537	354 40	423	121 00	6	1 90	185	286 40	15
104 64	9	15 80	257	197 10	661	391 05	4	1 00	132	214 00	16
5 75	1	3 40	20	13 80	97	24 70	3	75	26	39 20	17
97 80	2	5 10	279	136 35	725	277 40	2	50	155	216 10	18
144 75	24	42 25	564	669 50	1,606	396 20	12	3 20	285	382 50	19
201 60	5	9 45	1,255	930 85	1,037	371 75	3	75	323	461 20	20
170 25	21	34 05	464	559 80	1,549	518 70	17	4 25	387	561 25	21
49 90	..	....	47	59 64	403	182 35	16	4 50	125	179 95	22
129 90	24	44 75	567	360 60	2,140	850 45	6	1 50	313	434 20	23
26 85	.....	.....	67	74 70	139	68 95	1	25	37	43 95	24
75 90	5	9 40	121	64 35	670	203 00	5	1 25	133	184 80	25
167 05	14	26 25	302	337 99	1,242	378 45	4	1 00	168	231 76	26
65 55	2	2 80	103	114 55	530	181 55	3	1 00	201	329 75	27
95 51	17	26 78	504	514 45	681	254 95	....	.....	188	246 65	28
90 80	3	8 10	100	142 29	937	394 05	26	9 20	169	250 50	29
.....	1	1 40	53	40 85	132	45 30	1	25	28	50 10	30
230 00	9	14 45	204	272 15	1,303	468 90	8	2 25	173	230 65	31
50 25	5	9 20	228	276 90	365	188 20	6	1 50	74	96 53	32
24 75	7	12 70	295	232 00	789	208 05	7	1 75	211	175 25	33
2 80	4	6 35	127	73 20	115	29 85	2	60	61	35 20	34
137 45	6	9 30	219	381 20	1,772	462 55	6	1 50	213	343 05	35
72 95	5	7 55	411	579 30	276	152 55	2	50	81	123 80	36
48 85	1	1 55	174	222 60	357	118 20	1	25	102	156 60	37
228 55	5	10 50	358	367 75	670	200 30	3	1 00	232	346 15	38
88 10	7	20 40	631	476 05	1,112	278 85	9	2 50	204	357 45	39
227 30	16	31 50	505	673 90	1,552	417 26	11	2 95	329	474 75	40
14 45	5	6 05	238	230 50	969	247 65	2	1 00	82	126 45	41
81 15	2	4 35	183	269 15	735	234 35	19	7 95	234	342 60	42
93 30	4	9 00	403	585 40	758	214 90	9	2 25	141	197 15	43
77 35	2	4 20	222	183 05	325	88 10	1	25	118	161 75	44
98 95	4	8 70	181	354 85	1,055	488 40	18	9 50	177	271 30	45
75 40	3	6 05	144	120 25	365	94 30	.....	.....	89	152 15	46
85 00	1	2 00	100	123 70	435	176 40	1	25	133	165 85	47
1 40	....	....	121	125 50	23	22 55	16	5 75	58	79 75	48
86 90	1	1 40	279	133 78	778	387 70	3	75	137	190 50	49
15 85	5	7 15	263	207 10	144	36 00	.....	.....	202	137 50	50
221 05	12	25 90	1,897	1,368 12	1,781	538 45	27	5 50	409	658 35	51
81 80	2	3 10	140	163 20	773	292 55	4	1 00	108	158 35	52
4 40	1	2 55	47	86 05	294	154 65	2	50	48	72 60	53
6 00	53	156 40	444	1,076 80	5,210	1,492 20	104	28 05	1,111	1,419 05	54
180 15	8	19 45	439	842 15	5,241	1,656 95	94	26 55	998	1,349 90	55
97 05	15	51 10	362	385 10	1,224	328 95	6	1 50	172	148 30	56
146 20	14	24 70	261	284 50	587	233 80	4	1 00	274	317 30	57
156 05	160	304 30	534	1,299 65	1,386	425 80	16	4 00	253	493 10	58
97 85	5	12 55	726	622 50	261	71 30	6	1 60	130	203 50	59
155 95	3	6 55	230	213 45	1,094	289 40	9	2 25	217	262 55	60
290 90	11	25 05	891	1,490 10	2,913	1,022 25	113	32 65	544	899 35	61
125 60	7	19 30	192	510 30	3,879	953 05	16	4 30	502	745 15	62
98 35	5	8 50	241	253 30	641	200 05	5	1 50	120	184 30	63

STATEMENT of Returns forwarded to the office of the Provincial Secretary of all Fees

RETURN OF

Return shewing the number of Mortgages registered during

No. of registration division.	Registration divisions.	No. of nominal consideration.	No. of $1,000 or under.	Total.	No. from $1,000 to $2,000.	Total.
				$ c.		$ c.
1	Algoma	2	150	48,634 29	7	9,680 00
2	Brant	7	341	177,448 99	100	151,015 63
3	Bruce	22	567	275,400 60	171	25,669 90
4	Carleton	7	423	201,661 29	112	167,038 49
5	Dufferin	29	296	159,703 46	88	135,780 87
6	Dundas	3	192	94,501 38	43	65,286 90
7	Durham, E		103	47,225 93	28	40,565 42
8	Durham, W	1	68	35,741 00	43	66,619 76
9	Elgin	9	619	303,698 09	169	254,837 82
10	Essex	27	742	335,934 16	211	311,724 10
11	Frontenac		215	85,104 72	53	79,075 50
12	Glengarry	2	154	72,972 21	59	87,908 00
13	Grenville		194	85,005 05	60	88,657 00
14	Grey, N	13	373	181,941 43	97	143,757 93
15	Grey, S	19	324	135,189 90	130	140,622 48
16	Haldimand	9	233	114,354 45	72	108,419 86
17	Haliburton	1	40	12,778 03	2	3,010 00
18	Halton	17	216	113,079 59	54	87,131 98
19	Hastings	13	504	220,138 80	122	181,456 00
20	Huron	59	580	262,356 30	293	460,599 00
21	Kent	24	802	346,394 24	178	268,426 00
22	Kingston, C	1	140	58,307 00	32	47,200 00
23	Lambton	25	789	366,617 78	217	325,777 83
24	Lanark, N	24	118	43,399 68	24	30,312 32
25	Lanark, S	11	271	127,340 00	51	74,743 50
26	Leeds	4	372	184,200 40	103	145,715 60
27	Lennox and Addington	2	223	116,956 00	54	63,928 00
28	Lincoln	13	327	195,935 00	81	132,865 00
29	London, C	7	383	185,388 83	66	100,505 00
30	Manitoulin	4	55	18,849 70	2	2,750 00
31	Middlesex, N. and E		350	140,383 00	169	222,684 00
32	Middlesex, W	5	189	107,768 77	54	88,125 00
33	Muskoka	6	164	65,788 40	12	17,268 80
34	Nipissing	4	153	50,843 76	12	16,350 00
35	Norfolk	6	438	192,555 00	88	132,738 00
36	Northumberland, E	7	204	95,162 00	58	85,859 00
37	Northumberland, W		95	35,754 22	29	60,869 00
38	Ontario	10	352	165,816 60	101	160,727 45
39	Ottawa, C	7	478	223,101 00	116	173,280 00
40	Oxford	49	466	242,925 00	176	277,023 00
41	Parry Sound	5	152	54,457 12	7	13,908 56
42	Peel	10	197	88,285 30	83	129,956 50
43	Perth, N	2	294	148,309 75	126	196,100 00
44	Perth, S	5	130	69,448 79	44	66,645 00
45	Peterborough	2	386	162,201 28	88	136,354 99
46	Prescott	2	246	112,355 68	48	70,718 64
47	Prince Edward		205	94,198 00	62	94,329 00
48	Rainy River	1	82	44,632 73	12	15,958 00
49	Renfrew	20	368	150,852 60	72	110,147 68
50	Russell		215	90,778 31	21	43,535 00
51	Simcoe	17	856	390,474 34	180	286,940 65
52	Stormont	2	239	97,632 65	39	61,223 00
53	Thunder Bay	4	82	116,834 30	4	8,400 00
54	Toronto, E	34	465	265,099 00	257	411,925 00
55	Toronto, W	26	505	275,863 00	205	313,235 00
56	Victoria	10	351	165,247 00	75	110,679 00
57	Waterloo	6	370	197,113 17	140	202,175 25
58	Welland	9	416	193,262 00	88	129,688 00
59	Wellington, N	71	115	47,861 00	95	128,300 00
60	Wellington, S. and C	7	257	129,743 08	100	159,749 94
61	Wentworth	34	889	425,359 00	245	381,235 00
62	York, E. and W	21	343	183,136 25	135	110,013 43
63	York, N	6	228	103,184 72	70	106,284 25

and Emoluments received by the Registrars of Ontario for the year 1894.–*Conlu'd.*

MORTGAGES.

the year and the aggregate amount of such mortgages.

No. from $2,000 to $5,000.	Total.	No. over $5,000.	Total.	Aggregate.	Registration division.	No. of registration division.
	$ c.		$ c.	$ c.		
3	11,200 00	2	210,580 00	60,532 90	Algoma	1
63	205,337 39	19	177,684 00	711,475 96	Brant	2
79	237,459 00	6	37,358 00	806,887 50	Bruce	3
64	191,753 00	10	82,210 00	642,662 78	Carleton	4
58	171,407 20	6	30,882 14	477,773 67	Dufferin	5
38	109,061 53	1	6,000 00	274,849 81	Dundas	6
23	69,763 50	7	36,700 00	194,254 85	Durham, E	7
30	97,714 00	7	46,780 00	247,854 76	Durham, W	8
102	310,765 92	10	81,870 00	952,171 83	Elgin	9
97	366,931 94	12	126,550 00	1,141,140 20	Essex	10
32	96,645 20	5	30,039 00	290,864 42	Frontenac	11
21	62,038 00	3	18,984 00	241,902 21	Glengarry	12
20	59,895 00	4	25,863 70	259,420 75	Grenville	13
33	88,242 87	9	231,064 07	645,006 30	Grey, N	14
21	76,836 00	2	11,250 00	363,898 38	Grey, S	15
37	100,454 00	1	6,000 00	329,228 31	Haldimand	16
				15,788 03	Haliburton	17
51	162,985 00	7	86,833 34	450,029 91	Halton	18
65	186,283 35	13	94,050 00	681,928 15	Hastings	19
195	570,932 00	9	58,725 00	1,352,612 30	Huron	20
103	324,005 00	12	84,650 00	1,023,475 24	Kent	21
23	70,050 00	5	78,200 00	253,757 00	Kingston, C	22
79	262,267 80	10	81,850 00	1,036,513 41	Lambton	23
15	39,119 92			227,663 84	Lanark, N	24
26	82,784 00	9	80,239 00	365,106 50	Lanark, S	25
40	131,506 66	5	32,000 00	493,422 66	Leeds	26
37	112,316 00	5	104,500 00	397,700 00	Lennox and Addington	27
47	99,110 00	14	104,029 00	531,939 00	Lincoln	28
57	188,975 00	13	175,600 00	650,468 83	London, C	29
3	10,060 82			31,664 52	Manitoulin	30
112	303,088 00	4	49,400 00	715,555 00	Middlesex, N. and E	31
31	95,218 00	9	20,400 00	311,511 77	Middlesex, W	32
4	14,986 00			98,043 20	Muskoka	33
9	27,150 00	3	67,735 00	162,078 76	Nipissing	34
37	103,741 00	9	73,485 00	502,519 00	Norfolk	35
22	65,290 00	3	20,186 00	266,497 00	Northumberland, E	36
23	69,301 00	3	32,290 00	198,214 22	Northumberland, W	37
70	229,478 74	3	23,500 00	579,522 79	Ontario	38
90	292,773 00	4	743,150 00	1,432,304 00	Ottawa, C	39
144	439,609 00	21	190,992 00	1,150,549 00	Oxford	40
6	17,991 19	1	320,722 06	407,078 93	Parry Sound	41
86	280,727 82	9	81,300 00	578,269 62	Peel	42
110	333,303 20	6	44,900 00	722,614 95	Perth N	43
61	186,881 41	1	6,700 00	329,675 20	Perth, S	44
62	184,193 39	18	115,657 82	598,407 48	Peterborough	45
19	58,725 20	1	10,000 00	251,802 52	Prescott	46
37	110,804 00	3	38,346 00	337,677 00	Prince Edward	47
4	12,524 76			73,115 49	Rainy River	48
33	90,708 55	11	202,334 75	554,043 58	Renfrew	49
7	22,400 00			156,713 31	Russell	50
113	315,969 16	14	127,407 00	1,120,791 15	Simcoe	51
18	57,073 24	3	50,000 00	265,928 89	Stormont	52
7	22,750 00	2	29,437 85	177,421 85	Thunder Bay	53
249	830,326 00	168	2,794,837 00	4,302,187 00	Toronto, E	54
157	490,640 00	67	807,924 00	1,887,662 00	Toronto, W	55
31	97,555 00	13	131,627 00	505,108 00	Victoria	56
128	433,336 23	19	156,115 00	988,739 65	Waterloo	57
35	118,811 00	9	74,242 00	515,703 00	Welland	58
77	21,000 00	31	16,100 00	213,261 00	Wellington, N	59
71	232,252 00	11	116,797 00	638,542 02	Wellington, S. and C	60
180	548,467 00	36	374,487 00	1,729,548 00	Wentworth	61
118	396,187 34	48	571,661 42	1,361,027 44	York, E. and W	62
41	133,835 00	11	96,045 56	439,349 53	York, N	63

SECOND ANNUAL REPORT

OF THE

GOOD ROADS ASSOCIATION

OF THE

PROVINCE OF ONTARIO

1894.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO.)

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1895.

SECOND ANNUAL REPORT

OF THE

ONTARIO GOOD ROADS ASSOCIATION.

To His Honor the Lieutenant-Governor of Ontario:

The undersigned has the honor to present herewith the report of the second convention of the Ontario Good Roads Association, held at Toronto on February 7th and 8th, 1895.

Respectfully submitted,

JOHN DRYDEN,
Minister of Agriculture.

TORONTO, March, 1895.

OFFICERS FOR 1895.

President.....A. Pattullo.....Woodstock.
1st Vice-President.....J. F. Beam.....Black Creek.
2nd Vice-President.....A. W. Campbell.....St. Thomas.
Secretary-Treasurer.....K. W. McKay.....St. Thomas.

Executive Committee :

Jas. Beattie.....Campbellton.
Jas. Sheppard.....Queenston.
J. C. Judd.....Morton.
A. Macdougall, C.E.....Toronto.
M. Kennedy.....Owen Sound.
W. S. Campbell.....Brantford.
J. H. Wolley.....Simcoe.
Robert Jelly.....Jellyby.
E. Kidd.....North Gower.

SECOND ANNUAL CONVENTION

OF THE

ONTARIO GOOD ROADS ASSOCIATION.

The second annual convention of the Ontario Good Roads Association was held in the Y. M. C. A. Hall, Toronto, February 7 and 8, 1895.

THE PRESIDENT'S ADDRESS.

GENTLEMEN,—In opening this our second annual convention it is not my intention to detain you with a formal address. It appears to me that we have passed the sentimental phases, or what we might call the declamatory phases of the movement, and our efforts should now be to aim at definite objects and results. For that reason I prefer not to take up your time but to proceed to the practical papers and discussions as to what our methods should be.

I am glad to see so good an attendance, representative especially of the farmers, who are directly interested in this movement. You will remember that last year our initial meeting was held during a tremendous storm, but in spite of that we had a good meeting and made a start. If there were present to-day even fewer than I see here, I for one would not be in the slightest degree discouraged. We have, as you are aware, asked a number of bodies to send delegates. A number of them have done so, not as many as we would like. But perhaps this is not to be wondered at; for, as you know, a great many municipal men are very timid about touching new movements. However much some of the municipal representatives may be in favor of road reform, and of good roads, if they know of twelve people on whom they depend for their election who are not quite certain about the movement, you may be sure they will walk along the beaten path until they find no opposition whatever. Although we may regret this, we have no power whatever to get at them.

Some of you perhaps would like to know what the directors of the Association have been doing during the past year. We have not created a revolution; we never expected to. We are not able to show perhaps what you might call many practical results, but I think we have accomplished a good deal. Some who were not at our first meeting, and are not intimately acquainted with the work of the Association, may ask, "What has been done?" I would remind you that the agitation for good roads in Canada is not a great many years old. What I mean is that it is not more than three years since the demand for road reform began to assume something like the dimensions of a regular agitation. Through the instrumentality of this Association there has probably been more discussion on the subject during the past year or two than there ever was before in the history of the country. This in itself is a very good thing; but it is not a practical result unless followed by definite action. In this connection we cannot fail to recognize the services of the press. Our thanks are also due to the Minister of Agriculture, whom we induced to

print twenty thousand copies of the report of the proceedings of our last convention. You will be better able to understand how strong is the popular desire for information in this direction when I tell you that long ago the supply was exhausted and that requests have been coming in from all parts of the country which could not be met. I think I am safe in saying that had the number been double what it was, they would have been eagerly sought for and eagerly read.

We have practically constituted ourselves a bureau of information. You hear a good deal about royal commissions and commissions for getting information upon certain subjects. If asked my opinion, I should say that such commissions are sometimes valuable and sometimes of little or no value. But we have, without any hope of reward, constituted ourselves a sort of commission to collect information on the subject and prepare it for your consideration. Our Secretary will be able to present that information, and I venture to say that most of you will be surprised at the results achieved. He has obtained information from seventy or eighty per cent. of the municipalities of the province for the first time. This will be a storehouse in the future for those who want to discuss the question from reliable data.

We have not been satisfied with this however, but have been preparing information for circulation throughout the country. Mr. Campbell, has got out a pamphlet summarizing the information we already had at our command, containing practical hints for speakers and others desiring to know how roads are built and maintained in this and in other countries. We shall now send this out in pamphlet form, and I am sure it will be very valuable indeed.

Another thing the Board of Directors did: they induced the Superintendent of farmers' institutes to include this topic as one of the practical questions for discussion at the institutes' meetings throughout the province. Although Mr. Hodson was not able to put a great many speakers on for this subject, he did the best he could in response to our request. And he deserves our thanks. I may say that we ourselves had not many speakers available, and did not know whom we could recommend for the work. I am satisfied that there is no question that farmers are taking a deeper interest in than this subject. The fact of getting recognition from the Superintendent of institutes and having the subject brought on for discussion was in itself very important.

Another matter in which we made a step in advance is this: I think arrangements will be effected with the Agricultural College authorities whereby the subject of road building and road maintenance will be included in the lectures given to the students during this term. (Applause). I think further, that we shall be able to get it placed on the curriculum as one of the subjects to be taught at that Institution. I cannot tell you the satisfaction I have felt in urging this matter upon the Minister and Dr. Mills, and for this reason, we hear that a feeling exists in some quarters that this is an Association in which some of the engineers are interested. Well, I hope they are interested, and I hope that in the future the farmers will have the good sense to utilize their services where they can do so with profit. They are not obliged to employ such services under the present system or any other unless they desire to do so; it is entirely a matter for themselves. My opinion is that if we changed our methods entirely, there would be very few more engineers employed than at the present time. They might possibly be consulted a few times oftener; but I do not believe that the engineers will be the road-makers of the future at all—they will be the farmers' sons. Why is it so important that we should have this question taught practically at the College? Because the students who go there, will study the question, both theoretically and practically, and when they return to the farm, they will be able to oversee the making of roads. In this way we are giving the young farmers at the College an opportunity to learn something that will open up new avenues of usefulness and perhaps of slight remuneration as well. If we are successful in this, we shall have taken a very great step in advance.

You ask me in what other directions we have made advances. I believe that for the first time we have gained the ear of the public on this subject. I believe that the people are eagerly discussing it. They see that the gentlemen connected with this Association have no interests of their own to serve, that they simply desire to see the

country benefited in this direction as by reforms in other directions. I have been perfectly astounded at the interest that has been taken in some quarters. I have spoken before a number of very large audiences during the last two or three months on the question. One of them was the Fruit Growers' Convention at Orillia, where a very warm resolution was passed in connection with the matter. The same way at the Dairymen's Convention at Gananoque, and also at the Creameries' Convention at Chesley, and with Mr. A. W. Campbell, at what perhaps was the greatest meeting of farmers ever held in Canada, the Western Dairymen's Convention at Stratford. I might refer to the farmers' institute meetings as well. At all these places there was the same warm interest exhibited. I say therefore, that we have succeeded for the first time in getting the ear of the public—in getting the farmers of the country thoroughly interested. This is a very great step in advance—an advance that is an absolute necessity in any reform before practical results can be accomplished.

I will tell you another result: Although our municipal men are a little afraid of the question, and afraid to suggest any radical changes, and perhaps properly, I notice that the pathmasters and overseers are being watched as they never were before. If a municipal representative now lets a job of gravelling, and it is done in the old style, he begins to hear of it through the press and at the municipal meetings. The result is that we are getting better work done than ever before, and every year there will be an improvement.

As to the future, all I have to say is that I am not one of those who believe that Rome was built in a day, and I do not believe that any great reform can be brought about in a few years. You start the farmers of a certain section in stock breeding, for instance, where they have not been in the habit of breeding cattle before, how long does it take to educate them to secure the best possible results? You know you have been working for years in your stock associations to accomplish this. It is the same in butter-making and in the cheese industry. Why then should we expect in a matter of this sort, where technical skill and knowledge is especially required, to create a revolution in a year? My own belief is that our true policy is to go slowly and make sure of every step we take. We want progress and reform, not expensive experiments; we do not want to jump into something that may be worse than our present system. To illustrate: There is already legislation that may be taken advantage of in the different municipalities for the commutation of statute labor. I do not know what you think, but my own feeling has been this. I have taken very little interest in the efforts made to commute statute labor, for this reason: money spent by untrained pathmasters, by men who do not know how to make roads, will show little better results than statute labor under their direction. Before you can get good roads, under this or any other system, you must have more knowledge among pathmasters. I have nothing to say against pathmasters as a class. A great many are showing a good deal of intelligence and are doing excellent work; but as a rule this is not so. But before we can make any improvement, it is necessary that they should have more knowledge as to how roads should be made; in other words, that they should be trained specially for that purpose—I do not mean at institutions, but there should be a standard laid down, a uniform plan that they would have to work up to, and that men who have not sufficient knowledge to do this shall not be appointed to the position.

I believe that we are engaged in a very great movement, one that will have as great an effect on the well-being of this country as any before the public to-day. In England, the improvement of roads has probably doubled the value of land. We need not be discouraged. I have not the slightest fear but that there is sufficient wisdom engaged in this movement to go along slowly, wisely and thoroughly. The object of this meeting is to consult as to the best steps to take. (Applause.)

REPORTS OF FARMERS' INSTITUTE DELEGATES.

Mr. J. C. JUDD: I was one of the speakers representing this Association on the institute delegations. My division was No. 8, and embraced the counties of Durham, Northumberland, Hastings, Prince Edward, Lennox and Addington. I do not think I could have been given a more popular subject on which to speak than that of road improvement. I do not think I overestimate it when I say that eighty per cent. of every audience were in accord with the suggestions made in this regard and with the movement generally. I quite concur with the remarks of the President in reference to pathmasters. I know of no single pathmaster in any part of the country I have visited who has thoroughly acquainted himself with the subject. The annual appointment of pathmasters is utterly bad. No man can build roads without special knowledge, and so long as different men are appointed from one year to another they will not acquire that special knowledge. The suggestions already presented to the municipalities ought to be acted upon, and the road supervisor should look after the roads all the year round. The advocacy of that principle has been endorsed by many at the meetings I have visited, and I believe that even under the present system it might be in some degree workable if they will change the mode of appointing the pathmaster. A man should be hired at a certain salary by the year to look after the roads of a municipality, and should have under his control the machinery of the township for building roads. Very few municipalities have any machinery for constructing and repairing roads, and that is one reason why roads are so unsatisfactory.

Mr. WILLIAM DICKSON: The division to which I was appointed as the representative of the Association is known as No. 3, and comprises the counties of Essex, Kent, Elgin, Norfolk, and the South Riding of Oxford. We discussed the road question at fourteen meetings, and I may say that there seemed to be generally great interest taken in the matter. I may also state that in presenting this question I did not urge a change in the law regarding statute labor, but a better administration of the present system. I urged municipalities to adopt a system of road-making, to appoint the best men in the different divisions as overseers, to see that there was proper drainage, and a uniform system of grading; also where gravel is to be had, to see that it is properly applied. I did not urge expensive roads, except those leading towards our towns and cities, when, perhaps, the Macadam or Telford system could be constructed with advantage. The money required for construction would have to be raised by taxation. It is well understood that the present law allows statute labor to be commuted. So far only one township in division No. 3, namely, the township of Malden, in the county of Essex, has adopted that system, and it seems to be giving general satisfaction. At our meeting in Amherstburg a motion was carried in favor of abolishing statute labor, while at a few of the other meetings the feeling seemed to be more marked in favor of a change from the present system. Still, I am satisfied that a large majority of the people of No. 3 division are in favor of the present system. There is no doubt that it is defective in some respects, but where, I ask, are we to find perfection.

Some people advocate the construction of leading roads through the different counties and abolishing the statute labor system; but it would be well to remember that provision would have to be made for the maintenance of these roads. Besides, all the other roads of the country would have to be attended to, and the whole expense would have to be borne by taxation. A very large number of municipalities in this province are at present under a heavy debenture debt contracted largely through drainage expenditure, also through bonusing railways. And I do think to change the law at present would be both unwise and unjust. I am satisfied that much good will result from the present agitation. It has created an interest which cannot fail to have beneficial results, and I am firmly convinced that with the present system properly administered it will be satisfactory to a large majority of the people of this province.

Mr. P. MAHON: I had the privilege of representing the Association on Division No. 10, consisting of the counties of Glengarry, Prescott, Russell, Carleton, Lanark and

Renfrew. While the gentleman preceding me said that you find a very intelligent class of people west, I may tell you that while I am a western man, I have failed to find a higher type of Canadian manhood than I found in the east. (Applause.) The road question seemed to be the most popular for discussion at the institutes. The general consensus of opinion from the reading men everywhere was, "We are glad the road question is being discussed; we want road improvement, and we are delighted that the institutes have taken it up; there is great loss going on under the old system; what are your plans?" Questions relating to the matter came raining down upon me, and I found universal desire for reform. From three to six hundred farmers were out at the meetings, all anxious to learn what they could, and I never had closer questioners. At one meeting there was a very strong resolution introduced, and upwards of eighty per cent. voted for it, in favor of the abolition of statute labor and the introduction of a uniform business system of road-making. On another occasion there was not a single dissenting voice. The prevailing opinion is simply this, that the old system has not accomplished what it should accomplish for what it is costing us. It is one of the most, if not the most, expensive items we have. In our municipality we spend about six thousand dollars a year on the work, and two months after it would take a very smart man to find out where five hundred dollars' worth of work has been done. Why is this? Not in one single instance in the counties where I visited, notwithstanding the intelligence and progressiveness of the people, did I find a system laid down by the municipal authorities based upon the necessities and requirements of the municipality, taking into account the physical features of the country, the difficulties of making roads, and the material and money at their disposal. I have not found an instance of a system laid down on a business principle. In the midst of such confusion how could we expect anything else than what has resulted? The question was asked me: "What do you suggest?" I say I am not in favor of compulsion in any way; the people have a permissive system already, and if they have not taken hold of it, they should have done so. You have the permissive system, then meet together like wise men and devise a scheme, on a common-sense basis that will meet the requirements of your case. Meet and discuss this, and after you have laid down a suitable scheme, let whatever work is undertaken afterwards, no matter by whom, come up to the required standard and form a link in the whole system. I think it would be only fair to levy a uniform rate on the people of the municipality for road purposes, and expend it either by contract or in paying gangs of men working under competent direction, and according to the standard you have laid down, and continue these men right through the whole season. Then you will have a full day's work for a full day's pay. You will be paying no high salaries or extravagant fees, and I am sure the general opinion is that the official staff of our municipalities should not be increased. (Applause.)

Mr. J. F. Beam: I represent Division No. 7, comprising York, Ontario, Victoria, Peterborough and Northumberland. We had excellent meetings at all points, in many cases not being able to accommodate all the people. The road question was taken up at nearly all the meetings and received excellent attention whenever it was discussed, while the interest manifested was quite marked. At various places I asked for an expression of opinion from the audience, and all were in favor of improvement. In some localities they had better roads than in others, but there is no uniform system. This is where the Association can do a great deal of good, but in making any changes we should make haste slowly. Before we crystallize any plan into law, we should obtain all the information available on the subject, and then work out a plan.

Mr. James Sheppard: I visited the northern part of Ontario, and I may say that I found men there equal in intelligence and progressive spirit to any I have met. The interest taken in the road question was very marked. I found no unanimous opinion. There were a good many people still advocating the system of pathmasters and statute labor, which will not easily be got rid of. I may say, however, that the men who led public opinion were quite decided that we could not get good roads under the old system. But it is not the progressive men we have to deal with but the stay-at-homes, who offer a passive resistance to improvement which is very difficult to overcome. The question seemed to be a leading one, and I heard a great many plans proposed to improve the

present system, but I do not think the time has yet come for any radical change. At several meetings a resolution was passed to memorialize the Legislature to put the question on every municipal ballot paper, "Are you in favor of abolishing statute labor?" I do not think the majority would vote to do away with it, and whether it would be judicious to do away with it or not, I am not prepared to say.

Mr. A. W. CAMPBELL: I took charge of two or three meetings in the west, and while saying nothing about the people, I must say I found a very bad class of roads to deal with, and the people were sufficiently intelligent to admit that the present system of making and maintaining roads was a reflection upon their pride and they have come to the conclusion that money is being wasted. I showed them in one or two instances that the money expended added to the value of the statute labor computed at a low rate would more than pay the debenture debt for a sum sufficient to make permanent roads throughout the township in a term of twenty years.

At one meeting I was discussing the question of drainage. I happened to remark that often when drains were made no outlet was provided, so that the water stood in the drains and sediment filled them up; consequently the money was wasted. I asked whether there was any pathmaster willing to acknowledge this. One man said he would, and narrated a laughable instance that had come under his observation that bore out my contention.

ADDRESS BY LIEUTENANT-GOVERNOR KIRKPATRICK.

The PRESIDENT then introduced His Honor the Lieutenant-Governor, who said:

Mr. CHAIRMAN AND GENTLEMEN: I can assure you that I take a very deep interest in any subject that interests the people of this province, but particularly the agriculturists, because they are the most numerous and have the largest part of the province to take care of. It therefore gives me great pleasure to come here to-day and take part in your discussion on good roads.

The improvement of our roads is like the progress of the province in other directions and should keep pace with that advancement. In the early days when Ontario was first settled, the people were content with almost any sort of roadway sufficient to reach the great waterways. The next stage was the construction of the highways passing through the country. But now that the country is better settled and the competition in agricultural commodities is becoming so keen, it is necessary for the farmer to get his products to market with the least possible cost. Not only must those products themselves be of the highest possible quality, but they must be placed upon the markets of the world at the minimum of cost for transportation. If the means of transportation are impeding you—costing you three times as much as it you had good roads—it means just so much more added to the cost of production and the remuneration you receive is reduced accordingly.

Again, if one county has good roads and another has bad ones, the former will be able to bring its products to the railway or market at a much less cost, thus gaining an advantage. But not only this, the farmer living in a county with good roads will have more competitors for his produce, for it will cost the purchaser little more to go to the most distant county in the province than to the next county, if by so doing he can get the stuff he buys more cheaply and more easily to the railway station.

But I am not going into the cost of hauling and marketing products. It is easy to see that if the cost of hauling were lessened, it would be a benefit to every one of us. So would it be a benefit if men and teams could be engaged all the time instead of having frequently to remain idle. You have only to listen to the gentlemen who have spoken here to-day to be convinced of the waste that is going on under the statute labor system as at present conducted. The work of the average man is not worth more than fifty cents a day to the country under this system, and it is therefore apparent that this is a matter which urgently demands reform.

The use of improved road machinery is another matter to which the attention of the farmers should be directed—machinery which will increase the value of labor and do quicker and more satisfactory work. In these days when improved labor-saving machinery is employed on every farm, it is strange that old fashioned methods are still adhered to in road construction and maintenance.

I fully appreciate the difficulty of creating enthusiasm on this subject, because people may not clearly see any cash return in it, but when the farmer comes to reason it out, he will see that good roads mean larger returns for the products of his farm, and when he sees that he will insist on the necessary improvements being made.

Nearly every county in this province has provided large bonuses to railways passing through them, many to the extent of one hundred and fifty thousand dollars or two hundred thousand dollars, in order that they might have advantages in the way of transportation. But I believe there would be much more benefit to the farmer's pocket if similar sums had been expended in every county in the construction of good roads. (Applause.) The railways have been a benefit to the country as a whole, but sometimes not so much to the individual. They have not given a direct return to the individual taxpayer that he would have received if similar sums had been expended in the direction I have indicated.

The subject of road improvement is one that is engaging the attention not only of Ontario but of other countries as well. Governor Flower, of New York State, has recently been discussing it. He has been asking the people of that state to spend something like half a million in every county, and he works out the cost of the statute labor and the taxes for their roads, maintaining that it would cost less to do away with the present system entirely and provide the sum indicated for road improvement. At the opening of the Nova Scotia Legislature recently, the Governor informed the Assembly that legislation was to be introduced in this behalf. At the opening of the Imperial Parliament the other day the speech from the throne stated that a measure was to be introduced to provide for light or cheap railways. What is that but the making of good roads? They recognize the advantage of having cheap and good communication between the various points. They recognize that the cost of transportation enters very largely into the cost of every article in the markets of the world. When times are hard all the more care should be taken to check waste and there can be, perhaps, as much waste in the transportation of any commodity as in the production of it. Do not allow thousands of young men to throw away their time under the present statute labor system when they could be earning three times as much engaged on their own farms. (Applause.)

I will not detain you further than to congratulate you upon the large number of delegates I see here to day. I sympathize thoroughly with your work, and hope you may be able to suggest some practical means whereby the objects you have in view may be accomplished. (Applause.)

ADDRESS BY HON. JOHN DRYDEN.

Hon. John Dryden, Minister of Agriculture for Ontario, being called upon to address the meeting, said: I am very glad indeed to be permitted to accept the kind invitation of the officers of this Association to attend at one of these sessions. I want to say that I did not come here to teach the gentlemen assembled how to make Macadam roads. Some of you are aware that my time is already much taken up in preparing, mapping out and completing certain political highways, which may, I hope, be considered safe and trustworthy and upon which all parties may be willing to travel. (Laughter.) Nor do I intend to take up your time in discussing the necessity for good roads. I believe almost everybody is agreed that good roads are desirable. Why, even bodies that move as slowly as a government, like to know that they have an easy road to travel. (Laughter.)

I believe at the present time this question is almost entirely one of education. The people need to be informed—need to be stirred up—and I do not believe there is any better way to do this than through such an organization as this. It is for that reason I desire to say that I have called in this afternoon to express my sympathy with the objects you have in view. At the same time I would like to tell you frankly that I have no plans or propositions in my mind to submit to the Legislature having for their object the furthering of the reforms you are seeking to make. I am very glad to observe that at the present time you do not seem to be moving in that direction ; at all events, I have no plans in that direction myself.

I would like to say that, from my own personal observation, this Association has already done a great deal towards educating public opinion and arousing interest in the question. The newspapers all over the country are offering articles on the subject. Farmers and others have been discussing it, and our people generally have been compelled to think about it whether they would or not. They have been (if I may say it) meditating on the evil of their ways, which, as you know, Mr. President, is the first step towards repentance and consequent improvement. (Laughter.) Then in other quarters I observe that a great deal of enthusiasm has already been manifested. This is bound to lead to unity of effort and the propounding of some plan in the near future that will lead toward carrying into effect the improvements all desire. What I think is needed most of all is a strong public opinion—a strong public sentiment in this direction.

I do not know how it is with you, but my observation leads me to the conclusion that our road-making gets to run in a sort of a rut, and very little interest is taken in it. Therefore the easiest way is chosen when there seems to be a difficulty. Some get to think that road making is doing work for the Queen—the Queen's highway as it is called—and as the Queen is not there to see what they do, it is usual to expend as little muscular labor as possible. I quite agree that in some cases you do not get half the labor expended that you ought to get, but in other cases that is not so. I know sections where the farmers do just as faithful work on the roads as they do on their farms—where farmers are willing to work overtime if necessary, because they take a pride in their roads and have come to understand that road-making is really a work for themselves.

I have always taken the ground that this is a work rather for the people than for governments and legislatures to consider. It is a work that the people themselves must take hold of and perform. It is therefore necessary to stir them up, educate and instruct them as to the best possible methods.

There are three or four matters in connection with which public opinion should be aroused. The first is the proper drainage of roads, one of the most important matters in connection with road-making as I see it—(hear, hear)—one that lies at the very foundation, and the people do not seem to know anything about it. You talk about the desirability of a tile drain in the middle or sides of a road, but how many know what is meant by that? They have never heard of such a thing. Another thing is that a strong public sentiment ought to prevail against the repairing of roads in the style in which a great many of the gentlemen called pathmasters undertake to do the work. It is proposed for instance to gravel a section of road that has been gravelled perhaps some time in the past, and what do they do? They drag to that road gravel containing cobble stones from the size of your fist to the size of your head. Sometimes they are just dumped and left there. What can be the object of repairing a road in that style unless it is to make it so that people cannot travel on it at all? Some politicians are now condemning the N. P. because they say it obstructs trade, but this style of road-making deserves greater condemnation because it certainly obstructs trade without any living being receiving any advantage whatever. You want such a sentiment that pathmasters would not dare to do a thing like that. A wagon cannot go over a stone the size of your fist without making the commencement of what is going to be a mud hole. If I were going to suggest an amendment to the law, it would probably be in this direction : I would say that men who dared to do that sort of thing ought to be indicted before the courts and punished.

Another matter on which public sentiment ought to be aroused is in the direction of using wider tires for wagon wheels. I have visited parts of the country in which I find

that the sentiment of the people has already changed in this regard, and where the wagon-maker is obliged to make a wide tire. But you go into a section where narrow tires are used and you cannot use a wide-tired wagon. The teamster does not like to use it because it will not run in the ruts and accordingly draws heavier. When in Norfolk county not long ago attending the fair, I had the privilege of looking at one of these wide-tired wagons, and was told that the people there did not want any other sort. I would suggest that you put yourselves in communication with the various wagon-makers of the country, and see whether some steps could not be taken in this direction. The Legislature has always objected to passing a law forcing the use of wide tires, which really means to compel the farmer to sell his old wagon and buy a new one. What we want is to educate the public to understand the advantages of the broad tire and they will voluntarily adopt it in preference.

Then we want a public sentiment that will lead to the better direction of the labor employed in road-making. I quite agree that the statute labor system is not going to be done away with soon, and whether you like it or not, this should be understood. It is all very well for you to say that the Government ought to pass a law to compel the people to do away with it. The Government cannot take the people by the throat and compel them. The people will come out ahead and have their own way in matters of this kind. The position I have always taken is that the farmers of this country are too poor to undertake to pay for labor outside of themselves sufficient to complete and repair our roads. The only labor you can use is the very same labor you are employing now. You cannot afford anything else. What I wish most earnestly is that there could be a far better direction and control of that labor. That is the key to the whole situation. The labor is all right if you can only make proper use of it. (Hear, hear.) The farmers, whose labor is so often condemned, will do as good a day's work as anyone else you can find if only they know that they have to do it. You want overseers who know what constitutes a day's work and will insist on its being done and who know also how to build and repair a road properly and that is what no one can say we have at the present time. A large percentage of them know nothing of the work at all. Then this system of passing the overseeing around the neighborhood is entirely wrong. Farmer Jones is overseer this year and fixes the roads opposite his farm; farmer Smith takes it next year and puts the work on another side line where he is interested; a third neighbor takes it the following year and in very many cases undertakes to undo what the others have been carrying forward. Such a system leads only to confusion and great loss in the labor expended. You must have overseers who know their business, and the municipality should be willing to pay them a little if necessary to attend to it. Then you must keep them in their position long enough to enable them to accomplish something with some definite design in it. You must first know what you are going to do and how to do it; then let a man have the position long enough to be able to carry it out. This, in my judgment, is the strongest point and meets the greatest difficulty we have to contend with in the work of road reform.

Whether we live in city, town or township we are all agreed as to the desirability of improved roads, but the question is, where are we going to get the money and the labor to improve them? It is interesting to listen to how our American friends propose to borrow the money, but the farmers look at it from a different standpoint. They will not pay much attention to your figures; they must see the money in sight somewhere before they will accept the calculation. There is no doubt about the necessity for it; there may be no doubt about it paying the farmers, but they must first be made to see and understand it; it is a question of dollars and cents with them, and when, through the education supplied by this organization, they understand how it can be accomplished, they will themselves, in their own interests, undertake it and bring it to successful completion. (Applause.)

The PRESIDENT: I think Hon. Mr. Dryden's remarks are eminently practical and to the point. It is not a question of outside labor—the money expended on the roads should go to the farmers themselves. There is sufficient stone in many parts of the

country lying in heaps on the farms to macadamize the whole township. This stone might be sold to the municipality and the labor supplied by the farmers themselves.

Mr. A. W. CAMPBELL: I quite agree with the Minister of Agriculture that the statute labor system is all right so far as the law is concerned, but I believe the defect is in its administration.

At our farmers' institutes you are going into the question of feeding, for instance, in a scientific way. It is wonderful to listen to these discussions, and to observe how closely the qualities of various plants, etc., are examined into for feeding purposes. The great object is to endeavor to lower the cost of production, and to keep down all expenses as far as possible. But is not this subject worthy of just as careful consideration, especially in that township where ten thousand dollars is expended out of the general funds for all purposes, and half that amount is expended on the roads? Your tax bill is large enough as it comes round—you think it is large enough. Is there no way of economizing if half of the taxes are spent on the roads in addition to the statute labor—is not that worthy of consideration? You are considering the statute labor question only and not the total amount of money expended. I claim that the equal annual payment for 40 years of an expenditure of $150,000 required to improve all the roads in a township I now have in my mind would be $8,210. If the statute labor system were commuted at $1 per day and added to the grant from the treasury, it would equal $9,855. The annual payments to clear the whole debt in 40 years would only be $8,210, so that you would have over and above the first-class roads the sum of $1,619 for the maintenance of them.

Then would it not be to the advantage of the people living there to have $150,000 spent in the township for building roads, because there is not a dollar that need go out of the township, for the material is there. I claim that you should consider this question while you are considering the statute labor question. The remarks of the Minister were right to the point; he appears to know all about it; he has performed statute labor, I will wager that, because no one knows so well the wastefulness of that system as those who have worked under it. I have been told that if I expressed my views plainly at meetings of pathmasters I should get myself into trouble, but I have found them the best audience to address on the subject, because they know when you are striking them. The councillors, too, know how it is. They go around and meet this, that or the other man, who says, there must be so much money spent here, and I want this job, and next year I want it followed by something else, etc. I have seen this time and again. Right out of the town of Aylmer, in one of the best townships of the province, there was a road built recently. First that road was gravelled at a large expenditure. A few years afterwards they took it into their heads that it required draining, and they drained it accordingly, and they ditched it, throwing the earth up and grading it to the gravel. Well that was pretty good, but the next year a new council came in who thought it was all right to drain the road, but now they must grade it. The next council gravelled the road on top of that. What a waste of public money simply on account of ignorance. If there had been some definite plan upon which this money was to be expended, first the draining, then the proper rounding up and grading, and afterwards, when all was ready, the gravelling with first-class gravel, not mud and gravel, care being taken that it was properly consolidated and afterwards kept in repair by never letting it get out of repair, they would have had a perfect piece of road that would have cost no more money.

This question of road construction is one of very great importance. The question of seeing that the statute labor system is properly carried out is one thing, but the question of constructing a system of permanent roads is another. I may say in this connection that I do not believe in the government having anything to do with this question. I believe that it should be left entirely in the hands of the municipalities. I am aware that objection has been raised against this Association on the mistaken idea that we are trying to place this movement in the hands of the Government, who want to gain control of it in order to make room for an army of officials. This is an entire mistake, and I need hardly say entirely foreign to our plans.

GOOD ROADS.

By A. W. Campbell, C.E., St. Thomas, Ont.

With the dawn of civilization, many centuries ago, the first road was constructed, and the agitation for better highways, first for military and then for commercial purposes, was introduced.

A short reference to the road-making of the ancients, from which our systems have to a large extent been gradually evolved will not be out of place.

The earliest roads about which anything definite is known, are those of ancient Rome, one of which, the most celebrated, "The Appian Way" was commenced 312 B. C.

When Cortez conquered Mexico, the ancient capital was approached from various directions by paved roads from two to three miles in length and thirty feet in width. And in Peru Spaniards found among other indications of civilization, a network of highways superior to those in any other country. It is on historical record that there were over 1,700 miles of these roads, and that they were paved with large flags and free stone, and in many places set in asphaltic cement. With the disruption of the Roman Empire came a period at which road-making and maintenance became neglected, and seems to have fallen into general disuse until about the 12th or 13th century when the streets of large towns were protected by stone, laid in a gravel or concrete bed. In many continental cities this method of street paving is yet adhered to. The bad state of the roads in England in 1685 is referred to by Macaulay, the English historian, who states "that it was by the highways that both travellers and goods generally passed from place to place, and these highways appear to have been far worse than might have been expected from the degree of wealth and civilization which the nation had even then attained." The roads in England were at that time in a much worse condition than those of most European countries, and they were sometimes almost impassable. About the middle of the last century, some decisive steps were taken for improvement in both construction and maintenance, and shortly afterwards much improvement was effected by the introduction of the systems of Telford and Macadam. During the present century much has been done to improve the highways of Europe, more especially in France and Great Britain. A great deal has been said about the inferiority of the roads of this country, compared with those in England and the neighboring countries of Europe.

By way of explanation it should be stated, that before railways and steam navigation were invented, all the mails had to be carried over the common roads, and there were no other means of communication. These roads were commercial highways of the country, so that for many years road-making was a most important department of parliamentary care in these countries. It is said that in 1816, there were in England and Wales alone 25,000 miles of turnpike road, and this was just at the commencement of modern scientific road-making. The English people had become accustomed to them and they were looked upon as a necessity.

In Ontario the early settler began the agitation for improved highways while chopping his way through the forest. He had hardly established a settlement when steam navigation and transportation by rail came into existence, and so attracted all the traffic. This for the time checked our progress as road makers. Had railroading and navigation by steam been deferred for another half century, we would have been advanced farther in the science of road-making. But it was not to be expected in a country so extensive in advantages, where the temptation is so great for the population to spread over immense territory, that it would be possible to make roads everywhere, such as would be looked for in thickly populated countries, so we need not be discouraged.

For several years past the public press has been pointing out the necessity for reform in road-making. Men most acquainted with the details have been clamoring for reform. The people are ready for the change, if satisfactory plans are submitted for carrying out of the work. The result of this agitation was the formation of the Good Roads Association at Toronto in February last, and as an Association we desire to interest you in the best information concerning this most important subject. We have assisted largely by

way of bonuses in building our magnificent provincial railway system, and should now turn our consideration to the important question of roadmaking, and endeavor to create an interest among the municipal road makers throughout the province, and obtain an expression of opinion, which, in a short time, will be so decided that our representative law makers and councillors will have to give heed.

When the subject shall have been discussed in county councils, in township meetings, in farmers' institutes, and in provincial road conventions, a final conclusion reached, and that conclusion sent back to the councils and confirmed, we shall then have come as near as possible to a proper solution of the problem.

No person or association in the land can afford to neglect a movement so vital to the country's progress and prosperity; few, indeed, in addition to their concern in the general welfare, but have some special interest, direct or indirect, in the condition of highways.

The organization that will solve the good road problem will secure a notable place in the history of civilization. The best thought is required in developing or choosing a plan of action, and the solid support of the people when a plan is found.

Loss Through Bad Roads and Gain Through Good Ones.

It is impossible to refer definitely to the losses occasioned to any community through bad roads. The public treasury suffers, owing to the present extravagant system of road maintenance, to which must be added the large amounts paid both in the way of law costs and damages to persons who have suffered loss through accidents caused by non-repair and bad condition of the roads. That bad roads make large demands on private funds is admitted. In comparison, the economic benefits of good roads can readily be shown by their cheaper maintenance, greater and easier facilities for travelling, less cost for repairs to vehicles, a proportionate relaxation of strain upon our horses, a consequent saving of time, to say nothing of the comfort to be derived therefrom by those using the roads. The increase in land values will more than pay for the permanent improvement of roads and this increase will be greater if the county system of road improvement is adopted.

Apart from the acknowledged interest in good roads of the builders of wagons, carriages, bicycles, traction engines, and implements, and carriage owners, horse breeders, etc., and that of all merchants and manufacturers, in respect to the cheap and speedy distribution of goods and better collection of raw materials and money returns, there are many great semi-public institutions whose interests are deeply involved.

Railroads, in the equal distribution of their traffic through the seasons, securing constant employment of their force and equipment; telegraph and telephone companies, in the extension of country service; newspapers in the expansion of their circulation through free delivery that will follow good roads; banks and bankers, in the quicker movement of capital in country business; and all philanthropic associations and individuals in the provision of employment sufficient to "abolish poverty," or at least want and starvation, for a generation.

The fertility of tillable land is constant and it is the accessibility to market that fixes its value. Ontario's wealth in agriculture is owing to the facilities for transportation afforded by her network of railways. The resources of our country would be almost useless without such means. The same law by which the railway gives value to real estate also applies when a good road completes the system from the farm to the station. With good roads the owner can come and go when he gets ready; he can sell his produce when the prices are best; he is not compelled to wait the pleasure of sunshine or shower, and go "when the roads are good," nor is he compelled to force his produce upon an unwilling market at whatever price a crowded warehouse, elevator or railroad may dictate. He can profitably employ his teams at all times of the year; time will be saved, business will be regular, teaming can be done when the farm does not require attention, larger loads can be drawn in less time, the price of all products would be that allowed by the law of finance—supply and demand. We would no longer be at the mercy of greedy speculators and glutted markets, and the farmer would take his rightful place in the business world and increase profits by decreasing the cost of production.

The construction at once of a complete and thorough system of county roads for a municipality, or several contiguous municipalities, has many advantages. It brings into the locality, to be paid out for labor, and afterwards used in improving and increasing the value of the taxable property of the county, the amount required for the improvement. As soon as the system is completed there is a large increase in the marketable and taxable value of all the farms, and the people at once come into the enjoyment of the comforts and advantages which are derived from good roads. The work, the large amount of which makes it practicable to adopt a thorough system, can therefore be much more economically conducted than when it is carried on in a fitful and irregular manner, insuring at the same time the almost certainty of better roads. The annual tax now levied for the improvement of roads would be then levied to pay interest on the bonds, and to keep the roads in repair. In some portions of the country it is, of course, more difficult and expensive to construct and maintain good roads than in others. Any enterprise which reduces the cost of transportation, and increases the value of land, should commend itself to all. It would be difficult to devise a scheme that would contribute so largely to the general prosperity as money judiciously expended in the construction of first-class roads.

The Statute Labor System.

Statute labor or the road-tax system of personal service and commutation, though nearly universal among us, is unsound in its principle, unjust in its operation, wasteful in its practise, and unsatisfactory in its results Borrowed from similar road labor systems of England and France, it is like them, a remnant of the times when one of the duties by which land was held, was the obligation to make the roads passable for the troops of the lord of the manor, and while we do not advocate the abolition of statute labor which is wholly controlled by your local municipal councils, we wish to say that a wise and well regulated system for carrying on the repairs of roads, and of maintaining the greatest degree of efficiency, is as important as their judicious construction.

When the country was new, and the people were not in a position to pay money tax for building and repairing roads, it is quite easy to understand their reason for adopting the statute labor system, as they did the system of making "bees" for chopping out a piece of forest, or cleaning up a fallow. But as their financial position improved, they realized the fact that it was not profitable enough to spend days, possibly weeks, to repay by day's work the time put in for them by men whose services were little better than useless. As time went on they became aroused to this fact, as well as to the fact that one-half the value of their time in money, paid to good workmen, would secure the same amount of work performed in a better manner. The statute labor system should be as readily and perfectly discarded as the old system of invited labor. It is unfair because it recompenses inferior hands the same as those who are good workers, it places all classes of workmen on the same basis, it compels each man to work on the public roads for so many days. The actual cost of maintenance is greater than under any other system. Though the township pays no money to maintain these roads, their maintenance costs the ratepayers an enormous amount of labor, which represents to them so much money. The payment of taxes in this way is not profitable, in that taxpayers thereby shirk their duties to such an extent that the roads suffer from neglect and mismanagement. It allows property owners to impose on their township by substituting inferior hands, while they draw the same compensation for them as that received by able-bodied workers. This fact is too well known to need description, and that it has been tolerated suggests a doubt that as a people we are not destitute of humor. Any sensible man would not attempt to defend the present system, which is only upheld by custom, for the want of a better plan. It is a waste of time to advocate the commutation of statute labor until some better system is formulated, and the people shown that it is to their advantage, to adopt it.

Value of Statute Labor.

The value of labor, or any other commodity is generally determined by the amount of money necessary to purchase it. This is applicable to statute labor. In the first

place, the pathmaster is elected without the first thought as to his fitness for the position, and when he has learned something of his duties, another takes his place and begins to give the public the benefit of his experience on the road. It is principally where road-making materials are plentiful, and the character of the soil is such as to require but little drainage, that state labor, inefficiently directed, will succeed in making a fairly passable road, the cost of which is never considered. If the people would only take the pains to to ascertain from intelligent pathmasters their estimate of the value of the labor under their control, as at the present performed, we would venture to say that they would be surprised to find that a sum of money equivalent to the statute labor commuted at $1 per day, would, if expended on business principals, perform double the work in a more efficient manner. At present but few municipalities have adopted the commutation system. We have the opinion of Mr. W. J. Graham, reeve of Caradoc, in whose township the statute labor of two wards is commuted at 70 cents per day. In a letter to the secretary of our association he states "that the benefits are so apparent in the extra amount of work performed, and the style and manner of road construction that the difference between commutation statute labor and the old system would not bear any comparison whatever." We can show more road improvement under the commutation system and of a far superior class of construction than we could under the old system of statute labor in three years. In short the inhabitants of these wards have come to the conclusion that the old system of statute labor has served its usefulness, and that better results could be obtained at a commutation of 25 cents per day. Thomas Teall, reeve of South Grimsby, in which township the commutation system has been in force in the unincorporated village of Smithville for some time, states, "I unhesitatingly recommend the commutation of all statute labor, especially in unincorporated villages, and though the old system of road-making has done good service in the past it should give way to a more progressive mode, for the need is great." The details of the system in force in the township of Caradoc are as follows: The commissioner of each ward is appointed and has placed to his credit the number of days' statute labor commutated at 70 cents. He divides his ward into four sections and transfers to each a sum representing the number of days' statute labor. The commissioner selects some person of intelligence in each district to carry out his views and gives him the power to hire and discharge all parties working on the roads. No person is engaged except able-bodied men, and teams are required to haul one yard of gravel at a load. The overseer of the district gives each person working under him a certificate of his time to the commissioner, when the party is paid upon signing the pay sheet. In the wards where we have commuted the statute labor, pathmasters are not appointed as formerly. The township advances the amount of the commutation, and the work is performed in June, the commutation being collected in the fall at the time the other municipal taxes are collected.

In South Grimsby a different plan was adopted for the unincorporated village of Smithville. The money is collected by a collector appointed by by-law and expended by a commissioner on the different road divisions as they existed in the village before being set apart for this purpose, each division getting as near as can be the amount paid by it.

The condition of the roads, which is so important an element of the wealth and comfort of the community, should not be allowed to remain at the mercy of the indolence or false economy of the various small townships through which the roads pass. In one township its public spirit, wealth and pride, may induce it to make a good road; in the adjoining township a short-sighted policy, looking only to private interests in its narrowest sense, may have led the inhabitants to work upon the roads barely enough to put them in such a condition as will allow a wagon to be slowly drawn over them.

The pathmasters, who have the direction of improvements and repairs, should be liberally compensated for the time and attention they give to the work. Gratuitous services are seldom efficient. At best, they are temporary and local, and dependent on the whims, continued residence and life of the party, and, if the compensation be insufficient, the same evil exists only in a less degree. Skill, labor and tile cannot be obtained and secured without being adequately paid for.

When men of suitable ability, knowledge and experience, have been once obtained, they should be continued in office. By the present system of annual rotation, as soon as the pathmaster has learned something in his year's apprenticeship, his experience is lost and another takes his place, and begins in his turn to take lessons in repairing roads at the expense of their condition. In other occupations an apprenticeship for some years is thought necessary before a person is considered qualified to practice with his own capital, while a road overseer, the moment he is chosen, is thought fit to direct a work requiring much science at the expense of the township's capital of time, labor and money. The fundamental principal of the road tax is a false one. Its contemporary custom of requiring rents to be paid in kinds has long since been found to be less easy and equitable than money rents. Just so is work paid for by the piece preferable in many respects to compulsory labor by the day. Men are now taken from their peculiar occupations, in which they are skillful, and transferred to one of which they know nothing. A good plowman does not think himself necessarily competent to forge the coulter of his plow or put together its woodwork. He knows that it is truer economy for him to pay a mechanic for his services. But the laws assume him to be a skillful road maker—a more difficult art than plow-making—and compel him to act as one, though his clumsiness in repairing a plow would injure only himself, while his road blunders are injurious to the whole community. Skill in any art is only acquired by practical and successful experience aided by the instructions of those who already possess it. An artizan cannot be extemporized.

Labor by the day is always less profitable than that done by the piece, in which each man's skill and industry receive proportionate rewards. Working on the roads is generally made a half holiday by those who assemble at the summons of the overseer. Few of the men or horses do half a day's work, the remainder of their time being lost in idleness, and perhaps half of the even actual working time being wasted by its misdirections.

The commutation system operates very unfairly and severely upon those who commute, for they pay the price of a full day's work, and their tax is therefore doubled.

Road Laws.

A reference to the United States special consular reports on streets and highways in foreign countries shows that very little information may there be obtained that will in any way assist us in suggesting legislation necessary to provide ways and means for the construction of good roads.

Bryce, in his American Commonwealth, states that one of the chief functions of local government in the United States is the making and repairing of roads and bridges. These prime necessities of rural life are provided for by the township, county and state authorities, according to the class to which a road or bridge belongs. That the roads of America are proverbially ill-built and ill-kept, is due partly to the climate with its alternations of severe frosts, heavy rains and long drouths; partly to the people, who are too busy and too eager to use their capital in private enterprise to be willing to spend freely on highways, partly to the thinness of population. In many districts railroads have come before roads, so that roads have been less used and cared for.

The older laws and systems of road-making established in the states of the Union were similar to our present laws, and are interesting as failures; and while it may be profitable to discuss them, a reference to the new laws which have already been adopted in many states as a result of the good roads agitation, will direct us to new ideas worthy of consideration. Nearly all of these laws were passed during 1893, excepting those of New Jersey, which date from 1888.

California. In California the county council has a general supervision of roads in in their respective counties. Their duties are to open up new roads and take charge of such roads as have become highways by usage, dedication or abandonment, to abolish all roads not necessary, and to levy a property tax for road purposes. This tax is collected each year, to be apportioned to the special road districts entitled thereto, and kept by the treasurer in separate funds. Each county is divided into separate road districts, and each member of the council is an *ex officio* road commissioner in his district. It is his duty to

see that all orders of the council pertaining to roads are properly executed. These *ex officio* commissioners are paid for their services twenty cents per mile one way for all distances travelled by them in the performance of their duties. The roads are repaired by contract, and let to the lowest bidder. The advertisements for all bids specify the road or roads upon which the work is to be done, the kind or character, and the extent of the same, so as to plainly indicate to the bidders the work to be paid for. and when necessary a county surveyor furnishes profiles and specifications for the work. When completed the work is inspected by a committee of the county council, and no payment is made until it has been inspected by them, except that thirty per cent. of the amount of the contract may be advanced after the work is at least one half completed.

The road commissioners are not allowed to have any interest directly or indirectly in any contract under their control. This system is adopted for all work in the construction and maintenance of highways.

Indiana. In Indiana a county council, upon petition of fifty freeholders of any township, may submit the question of road improvement to the electors. The petitioners are required to pay all costs of election, and the construction of the roads is let to the lowest bidder. Debentures are issued to cover the cost, running from one to five years. These debentures and interest are paid by special tax upon the property of the townships, towns and cities along the road in proportion to the cost of the road in each. Improved roads may be built on main lines, and their cost assessed upon the lands within two miles on each side. They are in charge of a superintendent appointed by the council, who is paid $1.50 per day for time actually employed. and are kept in repair by the county in which they are located, the money for this purpose being raised in the towns, cities and townships interested. The rate for this purpose is limited to one mill on the dollar.

Massachusetts. In Massachusetts, which is rather a small state, a highway commission of 3 members appointed by the Governor has charge of all state roads, and upon petition of a county council may adopt any road as a state highway if the Legislature makes appropriation therefore, except that the grading and bridging is required to be done by the county council. These highways are afterwards maintained by the state under the supervision of the commissioners.

New Hampshire. In New Hampshire each township is a highway district, and all subdivisions have been abolished. The construction and repair of the highways is in charge of a township commissioner, the expenses are paid by a rate of not less than two and one-half mills on the dollar, and not more than $50 per mile of road per year.

New Jersey. In New Jersey the township roads are under the management of the township council, and debentures are issued for grading, macadamizing and improving the same. The county council may designate certain roads as county roads, and improve the same, the expense of which is paid—one-third by the county, one-third by the state, and one-third by the local municipalities through which the roads run. When the owners of two-thirds of the land bounding on any public road undertake to pay one-tenth of the cost of improving such road, it is the duty of the county council to cause such improvements to be made. The appointing of overseers of highways has been abolished, the township council appointing a competent person to superintend all the making and repairing of roads.

An interesting experiment was made in building good roads by the people of Union and Essex counties, N.J. The pecuniary benefits resulting from this work are summed up in a report from the board of freeholders of the former county, which states that the total outlay has been nearly $350,000, and there are now nearly forty miles of Telford and macadam road in the county.

The beneficial effect of the roads is seen in the fact that property in Union county alone has appreciated in value far more than the cost of the roads, as the assessment shows. The county issued $350,000 worth of road bonds, the interest on which must be met annually; yet there has been no increase in the county tax rate, because the increased assessment easily produces enough revenue to meet this charge. Very few of these roads have been built more than a year, and most of them only a few months; but already the people appreciate the advantages flowing from them.

Such practical evidence as this will certainly encourage road building.

New York. In New York the county council may adopt the county road system, and designate as county roads, highways not within an incorporated village or town. These roads are required, as far as practicable, to be leading market roads of the county. A county engineer is appointed, and these roads are then maintained at the expense of the county. The engineer and council have full supervision of the construction and maintenance. In all counties adopting the county road system, statute labor is abolished and the money tax system adopted for the repair of the township roads.

Wisconsin. In Wisconsin the township councils have full supervision and control of the highways, which are constructed and maintained under the supervision of a competent superintendent, who, when appointed, holds his office for three years unless sooner removed for cause. This superintendent has the same charge over the highways as local overseers formerly had. All taxes assessed for making and repairing roads are paid in money, and collected at the same time and in the same manner as other taxes. This law may be changed at any time that the electors' vote decides that the highway taxes shall be paid in labor instead of money for the ensuing year. Statute labor is then performed under the supervision of a superintendent appointed by the council. Under the act, unless a vote is taken every year to provide for working out the tax, the repair of all public roads is provided for by general tax throughout the township.

Summary of State Laws.

Here then we have the examples of different authorities controlling the construction and maintenance of highways.

In California, where the township system is optional, the county council constructs and maintains all roads.

In Indiana the roads are maintained by the townships; but the county council may assume control of particular roads when so authorized by vote of electors of municipality interested—the local municipalities paying all expenses.

In Massachusetts we find a combined system of county and state roads.

In New Hampshire the township councils control and maintain all roads.

In New Jersey, where it is said the greatest advance has been made in road-making, we find the townships in charge of the roads, while the county council may select certain roads for improvements, at the joint expense of the state, county and township.

In New York the county and township authorities maintain the roads, each providing for the expense of the roads under their control. Statute labor is abolished in all local municipalities when a road is assumed by the county.

In Wisconsin all roads are controlled by the township authorities. Statute labor is abolished, although it may be performed any year if a majority of the electors by vote so decide.

In all states the tendency is to abolish statute labor and divide the roads between county and township authorities.

Alignment.

In nearly every work on road construction, the author lays down two distinct rules: first make the lines as nearly straight as possible, and when changes of line occur, connect them by regular curves of proper radius; second when the line is intended to be straight, let it be absolutely so. These rules are in a very large degree considered obligatory, their violation does a great deal towards spoiling the beauty of any landscape through which it is necessary to make a road. A great many in following fixed rules and principles regard beauty as a thing unworthy of consideration, and fine trees of a century's growth are ruthlessly cut down, and hillsides marred by deep and ugly cuttings when by making a slight bend in the road, and following the contour of a hill with its natural and irregular curves the road would be given more beauty and expense could often be saved.

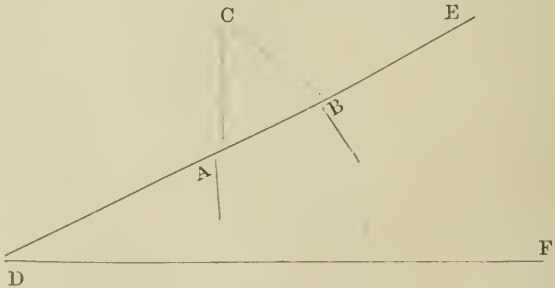
A consideration of the natural conditions ought to be among the determining elements of a line of road, the capability to seize upon and make the most of these natural conditions ought to be one point of decision. The aesthetic elements in the problem of making a road are not necessarily at variance with practical considerations.

Let road-makers consider this question, consider how much beauty might be preserved, and added to our landscapes especially in suburban communities without the sacrifice of any reasonable utilitarian requirement. It is the disregard of beauty without any corresponding gain which should be protested against.

Grades.

In forming a roadbed the grade should in all cases be reduced as far as practicable. The extra exertion a horse must put forth in overcoming a heavy grade is great. This can generally be lessened even in ascending steep hillsides by giving the centre line of the road a zig-zag direction, connecting the straight portion by circular arcs. The grades of the curved portions should be reduced, and the roadways also at these points widened for the safety of vehicles descending rapidly. The increased width of the roadbed at the curves in the lines of the road should increase in proportion to the sharpness of the curve; the increase should be one-half where the angle in the line is ninety degrees. The grade of the road should be regular between the changing points.

When a weight is drawn up an inclined plane the resistance of the force of gravity or the weight to be overcome is such a part of the whole weight as the height of the plane is to its length. If, then, a load rises one foot in every twenty of its length, a horse drawing a load of one ton is compelled actually to lift up one-twentieth of the whole weight, *i.e.*, one hundred pounds, through the whole length of the ascent, besides overcoming the friction of the entire load. In the following diagram D E represents the inclined plane of the road, upon which rests a wagon, the centre of gravity of which is supposed to be C. Draw C A perpendicular to the horizon, and C B perpendicular to the surface of the hill. Let C A represent the force of gravity or the weight of the



wagon and its load. It is equivalent in magnitude and direction to its two rectangular component forces, C B, and B A. C B will then represent the force which the wagon presses on the surface of the road, and A B the resisting force of gravity, *i..e*, the force (independent of friction) which resists the ascent of the wagon, or which tends to drag it down the hill.

To find the amount of this force from the two similar triangles, A B C, and D E F, we get the proportion; C A is to A B as D E is to E F; representing the length of the plane by I, it height by H, and the weight of the wagon and load by W, this proportion becomes, W : A B : : I : H. Whence A B equals $\frac{W}{I}\frac{H}{}$; that is, the resistance of gravity due to the inclination is equal to the whole weight multiplied by the height of the plane divided by its length. If the inclination be one in twenty, then this resistance is equal to one tenth of W.

In this investigation, trifling sources of error have been neglected, arising from part of the weight being thrown from the front axles to the hind ones in consequence of this inclination of the traces, from the diminution of the pressure of the weight owing to its standing on an inclined surface, and from the hind wheels bearing more than half the pressure in consequence of the line of gravity falling nearer them.

The results of experiments fully confirm the deductions of theory as to the great increase of draught upon inclinations. The following data has been established :

Calling the load the horse can draw on the level					100
On a rise of	1 in	100	a horse can draw only		90
"	"	50	"	"	81
"	"	44	"	"	75
"	"	40	"	"	72
"	"	30	"	"	64
"	"	26	"	"	54
"	"	24	"	"	50
"	"	20	"	"	40
"	"	10	"	"	25

In round numbers upon a slope of 1 in 44, or 120 feet to a mile, a horse can draw only three-quarters as much as he can upon a level ; on a slope of 1 in 24, or 220 feet to the mile, he can draw only one-half as much. and on a slope of 1 in 10, or 528 feet to the mile, only one-quarter as much. This ratio will vary greatly with the nature and condition of the roads, for although the actual resistance of gravity is always absolutely the same upon the same inclination, whether the road be rough or smooth, yet it is relatively less on a rough road, and does not form so large a proportional part of the whole resistance. Thus, if the friction upon a road were such as to require upon the level a force of draught equal to one-fortieth of the load, the total force required upon an ascent of one in twenty would be one-fortieth plus one-twentieth, which equals three-fortieths. Here, then, the resistance of gravity is two-thirds of the whole.

If the road be less perfect in its surface, so that its friction equals one-twentieth, the total force upon the ascent will be one-twentieth plus one-twentieth, and here then the resistance of gravity is one-half of the whole.

If the friction increases to one-tenth, the total resistance is one tenth plus one-twentieth, and here the gravity is one-third of the whole. We thus see that, on a rough road with great friction, any inclination forms a much smaller part of the resistance than does the same inclination on a smooth road on which it is much more severely felt and proportionately more injurious just as the gaps and imperfections which would not sensibly impair the value of a common knife would render a fine razor completely useless.

The loss of power on inclinations is indeed even greater than these considerations show, for besides the increase of draught caused by gravity, the power of the horse to overcome it is much diminished in even a greater ratio than that of a man, owing to its anatomical formation and its great weight. Inclinations are particularly injurious where a single steep slope occurs on a long line of road which is comparatively level. It is in that case especially important to avoid or to lessen this slope, since the load carried over the whole road, even the level portions of it must be reduced to what can be carried up the ascent. Thus, if a long slope of 1 in 24 occurs on a level road, a horse can draw up only half of the load he can carry over the level portion.

The bad effects of this steepness are especially felt in winter when ice covers the road ; the slippery surface causes danger in descending as well as increased labor in ascending. The water also runs down the road and gullies it cut, destroys its surface and causes a constant expense for repairs.

It is very important never to allow a road to ascend a single foot more than is reasonably unavoidable. If a hill is to be ascended the road up to it should nowhere have a change of grade ; but it should be located and have such cuttings and filling as will secure a gradual and uninterrupted ascent the whole way.

In forming excavations the inclinations of the side slopes demand particular attention. This inclination will depend on the nature of the soil and the action of the atmosphere and internal moisture. In common soils, such as ordinary earth formed of a mixture of clay and sand, or compact stony soils, the side slopes would withstand very well the effects of the weather with a greater inclination, although it is best to give them

one and a half feet base to one foot perpendicular; the roadway will by this arrangement be well exposed to the action of the sun and air, which causes rapid evaporation of the moisture on the surface.

Pure sand and gravel may require a greater slope, according to circumstances. In all cases where the depth of the excavation is great, the base of the slope should be increased. It is not usual to use any artificial means to protect the surface of the side slopes from the action of the weather; but it is a precaution which in the end will save much labor and expense in keeping the roadway in good order.

The simplest means that can be used for the purpose consists in covering the slopes with good sods, or else with a layer of vegetable mould about four inches thick, carefully laid and sown with grass seed. This means will be amply sufficient to protect the side slopes from injury when they are not exposed to any other causes of deterioration than the wash of the rain and the action of the frost on the ordinary moisture retained by the soil. The side slopes form usually an unbroken surface from the foot to the top. But in deep excavations, and particularly in soils liable to slips, they should be formed with horizontal cuttings, termed benches or small terraces, which are made a few feet wide, and have a ditch on the inner side to receive the surface water from the portions of the side slopes above them. These benches catch and retain the earth that may fall from the portions of the side slopes above them, besides rendering slides less liable. When side slopes are not protected, it is well in localities where stone is plentiful to raise a small wall of dry stones at the foot of the slopes to prevent the waste from being carried into the roadway.

In excavating through solid rock which does not disintegrate on exposure to the atmosphere, the side slopes should be made perpendicular; but as this would exclude to a great degree the action of the sun and air, which is essential to the keeping of the road in good order, it will be necessary to make the side slopes with an inclination varying from one foot base to one foot perpendicular, to two feet base to one foot perpendicular, according to the locality, the inclination on the south side, in northern latitude, being greater to expose better the road surface to the sun's rays.

Slaty rocks generally decompose rapidly on the surface when exposed to moisture and to the action of the frost. The side slopes in this material may be cut into steps, and then be covered with a layer of vegetable mould sown in grass seed, or else the earth may be sodded in the usual way. The soils which are liable to slip are the stratified soils, which have a dip or inclination to the horizon. These slides are caused by the action of the frost or from the pressure of the water which insinuates itself between the strata. Soils formed of alternate strata of sand or clay are of this character, particularly if the clay is of a nature to become semi-fluid when mixed with water. Drainage is the best system to adopt as a preventative in cases of this kind to stop the surface water from running down the slopes and to cut off all springs which run towards the roadway from the side slopes. A ditch constructed on the uphill side of the road will answer to cut off the surface water, as it will prevent it reaching the slope. It frequently becomes a very difficult task to secure side slopes where slides are caused by the action of springs. Drains formed of broken stones covered with good sods, laid with the grass side down to prevent the drain from becoming choked with earth, will prevent the action of water if the sources can be easily reached by excavating into the slopes. Where the sources are not isolated, and the whole mass appears saturated, the drainage may be affected by excavating trenches at intervals to a depth of a few feet into the side slopes, and filling them with broken stones, or else a general drain of broken stone may be made throughout the whole extent of the slope by excavating into it. The drain should be arranged like an ordinary retaining wall, with buttresses at intervals extending into the earth farther than the general line of the drain. In forming embankments the side slopes should not be less than one and one-half feet base to one foot perpendicular. The surface water from the top of the roadway should not be allowed to run down the sides of the hill, as it would soon cut them into gullies and destroy the embankments. To prevent, as far as possible, the settlement which takes place in fills, great care should be exercised in making them; the earth should be laid in successive layers of about five feet in thick-

ness, and each layer settled with heavy rammers. This method, on account of the great expense, is seldom resorted to; but where the fill is carried out from one end, taking the work forward on a level with the top surface, there is a want of compactness in the mass, and it is better to form the outside of the embankment first, and to gradually fill in towards the centre so that the earth may arrange itself in layers with a dip from the sides inward; this will in a great degree counteract any tendency to slip outward.

The perpetual advantage of an easy grade should be secured at the beginning. Straight lines are the best on light grades, and are also the cheapest. It is economy, however, to secure easy grades at the expense of straight lines where such grades are otherwise unobtainable, because the perpetual advantage to all users of the road more than off-sets the disadvantage to the land owners from ill-shapen fields.

Drainage.

A roadbed cannot be rendered satisfactory unless great care is taken with the drainage of the road surface and the formation of proper gutters and side ditches, and also the drainage of the roadbed and adjoining lands. Where the road is to be constructed on a wet and retentive soil, a perfect system of underdraining must be provided, by cutting trenches diagonally across the roadbed and discharging into the side ditches. These trenches should be from eighteen inches to two feet deep, and about one foot wide across the bottom, with a slight side slope outward. In these should be constructed porous drains, composed of clean, coarse broken stone, brickbats, or some other suitable material. The trenches should be filled up to the level of the subgrade. They should be placed much closer when in loose soil. They should have a good fall and a free outlet. In constructing roads in rural districts open ditches should be cut on each side of the roadbed continuously at a distance of about twelve feet from the sides of the metalling. They should be of a size and declivity to readily conduct all water that will flow on the road or reach it from adjoining lands. They should be of sufficient depth to provide for the drainage of the foundation, at least eighteen inches below the subgrade. The strips of ground between the road and the open ditch should be properly graded to conform with the crown and grade of the metalling, and should be seeded and as much as possible kept in sod. This serves on a country road the same purpose as a curbing on city streets. It will always be clean, pleasing to the eye, and very largely assists in preventing mud being carried on the road metalling. Besides this, uniformity in the crown will always permit of teams passing each other. In wet seasons our roads are nearly impassable, because there is no system of drainage and no outlets for water, and usually the centre of the road is the lowest part of it. The ditches being used for the drainage of surrounding fields. In many sections of the country the ditches are choked, and are not in a condition to do the work expected of them. A drain or two of tile under the roadbed would help materially in keeping the roadway dry. Without water there can be no mud.

The location of subdrains when required must be governed by the nature of the soil. When this is gravelly and pervious to water the open ditches on each side of the road, even if sixty-six feet wide, are sufficient for draining the roadbed; if there be any springs under the road, especially if they rise under an impervious soil, a subdrain leading directly to the side ditches will be required. Should the road be on a side hill a deep open ditch on its upper side may be sufficient. In such a case the surface water from the water table on the lower side of the road should be conducted across and under the road by an ordinary dry stone culvert.

Whenever water with or without frost is liable to render the foundation of the road insecure, provision must be made against it. There are perennial springs that anyone can see, and basins of rock, hardpan or clay, which become springs in wet weather. These are very apt to cause trouble when cuts have been made. The chances are too numerous for specification. Simple land drainage will improve lines of highways in frosty regions. Three inches of sand along the line of a wet meadow, underdrained, furnishes a dry footpath, and when it is overgrown with grass, thatch roofed as it were, frost never softens that sand, and we see illustrated the effect of solid stone floor roofing upon a ridge of drained clay highway.

In St. Thomas the engineer constructed one short street with flake stone foundation and gravel covering; and being anxious to keep the cost as low as possible it was thought unnecessary to go to the expense of draining the foundation.

This piece of road was a valuable lesson. When all the other streets are hard and dry this is wet and spongy. During construction it was so dry that it would have apparently been a waste of money to drain it. During the wet season the wheels rut readily, while there is scarcely an impression on those that are drained. More labor and money has already been expended on this road, which was constructed three years ago, than would have been necessary to completely drain it in the beginning. This one example has clearly shown the great importance of perfect draining. Mistakes are often made in not carrying ditches to a proper outlet in the natural watercourses leading from the road into private property. Under the Ditches and Watercourses Act the municipality has the same power as a private individual, when the various owners fail to agree upon the construction of a drain. But municipalities, rather than force an outlet through private lands, end their drainage with imperfect outlets, and damage the road rather than improve it. The authorities should not care who the owner of the adjoining property is, proceedings should be taken to enforce these outlets, and the owners should be obliged in every instance to pay their just proportion of the cost of such work.

Many a municipality has been prejudiced against road improvement owing to the bad work of contractors or the results of ignorance on the part of its own officials. A municipality may have been enterprising enough to decide to improve some of its roads, and the people may have been generous enough (sensible enough would be better) to have furnished the money, and the money may have been expended. Yet after the lapse of a few years the roads are as bad as ever. It may have been proved that to have maintained these highways in a state of excellence would have cost far more money than the people had to spend on the investment. This has been the experience of a great many municipalities, and the conviction held in these is that macadamized roads are a delusion, and has done much to retard the progress of the movement for the improvement of country roads. The real fault lies in the fact that it was imperfectly drained. Those who have not had much experience are not apt to realize the paramount necessity of maintaining a perfectly dry foundation of earth for their surface of broken stone to lie on. A protracted rain will soften it, and when a heavy load passes over it injurious ruts are sure to be the result. In latitudes where the frost penetrates deep, water in the soil will freeze, and its consequent contractions and expansions result only in the ruin of the road. In order to ensure a permanent road the dirt bed on which the broken stone is to be placed must be thoroughly drained, and after that the mass of stone which forms the surface of the road must be so consolidated and packed that it is practically water-tight. If these important matters are attended to the road will be durable and easily maintained.

All authorities agree that two rules must be followed in order to maintain good roads. First, take the water out; second, keep the water out.

Grading and Constructing of Roadways.

It is a mistake to suppose that narrrow roads are the cheapest. Of course when constructing a new road the cost is in proportion to its width but a narrow road is always the more expensive to maintain; owing to the vehicles being compelled to keep more or less to one track, nothing is more destructive. The traffic on a wide road is always more evenly distributed, provided of course, that it is constructed on scientific principles and kept in good repair. There is another very important advantage that wide roads have, *i.e.*, they obtain a greater amount of light and air. It will always be found that a wide and open road will be dry, long before a narrow and confined one. When roads, especially main roads, are laid out, care should be taken to secure plenty of land. The widening of an old road is always a most expensive work, and it is sometimes necessary to destroy trees and remove buildings. The cross section of a road is very important, and a question concerning which there is great difference of opinion. It should neither be too flat or too rounded. In the former case the surface water remains on the road instead

of draining off into the side ditches, whereas in the latter, owing to its great convexity, vehicles can only travel with comfort or indeed with safety in the centre of the road, thereby soon making three tracks there, and, as before remarked, nothing destroys a road sooner. There is another disadvantage, that as soon as the traffic is driven off the centre of the road, a double wear takes place, owing to the tendency of vehicles to slid down the inclined plane by force of gravity and as this tendency is perpendicular to the line of draught, the labor of the horse and the wear and tear of both wheels and road surface is much increased. The sole object in rounding the surface is to allow the water to run off freely, and it is now agreed that a slope of one or two inches to six feet width, according to the nature of road covering, is sufficient for all roads constructed of good hard material, provided, of course they are kept in good repair. MacAdam says; "I consider a road should be as flat as possible with regard to allowing the water to run off it at all, because a carriage ought to stand upright in travelling as much as possible. I have generally made roads three inches higher in the centre than I have at the sides when they are eighteen feet wide; if the road be smooth and well made, the water will run off very easily with such slope." The drainage of surface water is better obtained by selecting a course of the road that is not horizontally level because then the slightest wheel track becomes a channel to carry off the water, whereas in the case of a level road, it must be apparent to everyone that no matter how rounded the surface may be, every track soon becomes a basin to hold it. The roadbed should be excavated to the same contour as the finished road is to be, not with any idea of drainage because it must be remembered that as soon as the road becomes subject to rolling or the pressure of heavy vehicles, the road material becomes forced down into the roadbed, and the soil in its turn worked up into the covering so that the whole becomes amalgamated, but because by so forming the roadbed there will be an equal thickness of material over the whole surface, and, if a road is made and maintained according to scientific principles, there is no reason why any one part should have a greater thickness than another. The great consideration in road-making is to so construct the road surface that no moisture shall penetrate the foundation, and in this way prevent the formation of mud which would work up into the stone. To insure this there must be a compact and solid foundation. A road must be perfectly smooth both before and after a vehicle has passed over it, but if it sinks in the least this yielding presents a miniature hill up which the vehicle must be raised with loss of power. If the depression were one inch and the wheel four feet in diameter, an inclined plane of one in seven would be formed, and one seventh of the entire weight would need to be lifted up this inch. A road surface of india rubber of the most perfect smoothness, would therefore be the worst possible for traction, though very pleasant for passengers. The wheels would always be in depressions, and the horses would always be pulling up hill. An elastic bottom for a road such as a boggy substratum would, for this reason, cause great waste of draught. A solid unyielding foundation is therefore one of the first requisites. A road made of broken stone laid on the earth without any foundation is defective. It will always be loose and open, and never consolidate into a compact mass. In winter, the water penetrates, is frozen and breaks up the road. After a thaw and in wet weather the road is a quagmire. At the best after a rain, the semi-fluid soil will rise up to the surface and form a coat of mud, and after a drouth the looseness of the stones will make them rub off their angles and soon wear out. Nor will any thickness of stone destroy the elasticity of the soil. The central part of the road may be macadamized for a width of only eight feet, which is about the least width that a vehicle can be readily driven on. In such a case it would not be advisable to make the entire roadway less than twenty feet wide, so that vehicles may pass on each side of the central portion, and that the macadamized part may be easily widened in the future.

To provide for constant traffic in both directions, the macadamized portion of the roadway should be sixteen feet wide, as the axles of wagons and buggies are usually five feet eight inches in length, or five feet two inches from one wheel to the further end of the axle. This allows a space of two feet from the further wheel to the outside of the paved part of the roadway. Vehicles could always keep to their own side of the road without going off the paved portion, while it will always give a play of nearly two feet on each

side, and of nearly four feet altogether in the width allowed to the vehicle to travel over, thus leaving space enough for vehicles to avoid always going in the same track, and wearing the roadway into ruts.

If any further addition is to be made to the width of the macadamized part, it should be enough to allow three vehicles to pass over it abreast *i. e.*, sixteen feet and seven feet four inches, or twenty-three feet four inches in all. This is a common width for the paved part of a roadway of this description. A difference of one foot eight inches can be gained by reducing the two feet of spare width at the outsides by ten inches on each side. However, the clear width between the ditches should not be less than twenty-four feet, while a thirty-foot roadway will allow four vehicles to meet abreast, and thirty-five feet is enough for a regular traffic of four vehicles.

In cuttings or embankments in ordinary loose earth or gravel, the side slopes should be made one and one-half horizontal to one vertical; in rock one-quarter to one is sufficient; for stiff clay two to one should be allowed and soft greasy clay requires a slope of three to one to be allowed. In the case of ordinary earth when cuttings or embankments are not more than five feet high, a slope of one to one is sufficient, and one-half to one in stiff clay.

In the case of embankments, the surface of the ground when it has a transverse slope, such as would cause the bank to slide laterally, should be cut into steps before the embankment is commenced. The necessity for this for any particular slope can only be determined by the conditions of the case; water may get in between the original surface and the made ground and render the embankment very liable to slide. All stumps, brush and vegetable material should be cleared off the surface before the embankment is commenced.

Culverts.

The question as to what kind of material is best for culverts is important to municipal authorities A large proportion of highway expenditure is for repairing and reconstruction of timber culverts. Timber does not last long in culverts, where it is subjected to the varying conditions of wet and dry. Culverts must be maintained in the road grade, and where timber is used we must expect the annual outlay for reconstruction and repairs to be very large. This is not all. The stringers or covering decay so quickly, that accidents happen by a horse or load going through them before the authorities think that the timber in them has commenced to decay. Two or three times the value of a permanent culvert is often paid to settle the damage, or the law is invoked and invariably large damages are given against municipalities—this, with the costs of suit which are always large enough, makes timber culverts a very expensive part of road maintenance.

Pipe Culverts.

The construction of culverts in a permanent manner, so as to get rid of the repeated demand for repairs and renewals, must be settled.

The use of vitrified collar tile and cement pipe for road culverts has now ceased to be an experiment, and the old box culverts of timber are fast becoming a thing of the past. The cost of culvert pipe is usually a little more than timber, but is soon made up in saving the cost of repairs. Well made pipe of proper strength once laid needs no further repairs, and experience shows that it will last for years. It too frequently happens that when township councils order the construction of culverts under roadways the pipes are brought on the ground, the contract is let to the lowest bidder, who invariably has no experience in such work, the ditch is dug to the required depth to carry the water from the channel above, the workmen place the pipe, sometimes with the hub down grade, or in some cases with the centre of the ditch lower than the outlet, and in this slovenly way the results are unsatisfactory.

The bottom of the trench should be rounded out to fit as nearly as possible the curve of the pipe from the lower surface up to the horizontal centre line. When collar pipe are used depressions should be cut in the bottom of the trench to fit the sockets, so that when the pipe is laid its entire lower surface from end to end will rest solid. If the ground is soft or sandy this cannot be done, but the same result may be obtained by carefully ramming the loose earth under and around the lower surface of each section of pipe up to its horizontal centre line after it is placed in position. When quicksand is encountered a concrete foundation should be laid in order to prevent the lodgement of debris or ice A culvert should be built with a good fall. The pipe should be laid with the hub or flange up grade or towards the inlet. When this is done properly it is a matter of no consequence how high the bank is above the pipe, for it cannot be broken by the weight of the earth. If the bank is solid and not likely to cave or slide, the end of the pipes will not require to be protected. If the bank is soft an abutment of some sort should be made to receive the end of the tile, and the foundation of this should extend below the influence of the frost to prevent heaving and settling, which might throw the end of the pipe out of position. These abutments should extend high enough to protect the banks during high water. When stone or brick abutments are too expensive, a good and cheap substitute can be made of cedar plank and posts. These should be constructed with considerable inclination towards the roadbed, to prevent the pressure of the embankment from crowding the planks outward. Where gravel is plentiful a concrete for this purpose will be found preferable to timber.

A pipe culvert should have a good fall, and be so constructed that it will drain itself. When required, two or three pipes may be laid side by side, and in case of altered circumstances the capacity of a culvert may be increased by laying additional pipes. In such cases they should be placed far enough apart to secure a solid bed for each. The best pipe should be used, and every care exercised in putting them in. It is a mistake to purchase second class or culled pipe for this purpose, as is sometimes done.

The following table shows the size, capacity and average price of vitrified pipe in carload lots at any railroad station in Ontario.

Diameter (in inches.)	Weight per foot (in pounds.)	Price per foot
	Single strength.	
6	10	15 cts.
8	16	17
9	23	20
10	34	22
12	44	29
15	63	41
18	84	60
	Double strength.	
12	1½ " thick	75 cts.
15	1¾ " thick	$1.00
18	2 " thick	1.25
24	2⅝ " thick	1.75

Prices of cement culvert pipe at factory.

Diameter (in inches.)	Price per lineal foot.
4	10 cents
6	12½ "
8	20 "
10	25 "
12	35 "
14½	55 "
18	65 "
21	95 "
24	$1.25
30	$1.75
36	$2.50
43	$3.75

In determining the size of the culvert it is necessary to take into consideration the area to be drained. Statistics show the maximum rainfall to be about two inches per hour. One inch of rainfall gives 22,633 gallons per hour for each acre. Experience proves that owing to various obstructions not more than fifty per cent. of the rainfall will reach the drain or culvert within the same hour and due allowance must be made for this fact in determining the size of the pipe required. Severe storms are usually of short duration.

The following table shows the carrying capacity of pipe :

Size.	Three inch fall per 100 feet.	Six inch fall per 100 feet.	Nine inch fall per 100 feet
6 inch	129	183	224
8	265	375	460
9	355	503	617
10	463	655	803
12	730	1033	1273
15	1282	1818	2224
18	2022	2860	3508
24	4152	5871	7202

Brick culverts.

Where the current is rapid and the volume of water so great as to warrant the use of culvert pipe, brick culverts will be found to be economical. The life of the wooden culvert is from four to ten years, and that of a brick culvert from fifty to sixty. A solid foundation is required, either natural or artificial, but not necessarily a dry foundation, from the fact that good brick culverts have been built when it was found necessary to keep the water dipped out of the pits; a dry foundation is preferable. The material should be first-class sewer brick. Any that show signs of softening should be rejected as they will soon crumble. Each brick should be dipped in water, or well saturated before being put in the wall. The sand should be clean and sharp, and be taken from the creek in preference to that from the bank which is liable to contain more or less clay, and will make the mortar soft. The bottom of the pit for the barrel of the culvert should be at least eighteen inches below the bed of the stream, but this would depend on the size of the culvert to be built, and the height of the road grade. Wing walls should be constructed, commencing at least twenty-four inches below the bottom of the culvert, in order that the water will have no chance to get under them, and ultimately undermine the whole structure. The mortar should be composed of two parts of good hydraulic cement and three parts sand. The bricks on the inside of the barrel of the culvert at their front edge should almost touch each other so that there will be very little mortar

to wear or wash out, which in time would let the bricks become loose and drop out. The water should never be allowed to wear the bottom of the stream away from the lower end of the culvert. If a fall of the water over the end of the culvert exists it will wear the mortar from between the brick and ruin the masonry. The wing walls should be built three or four inches higher than the top of the barrel so as to hold the dirt overlying the culvert. The walls should be at least eight inches thick, and thicker in proportion to the amount of pressure which they have to withstand. A two-inch oak plank should be placed on top of the wall, of a width equal to the thickness of the wall and secured by bolts built into the masonry, the object being to prevent the brick from being knocked loose. Brickwork of this description costs ten to twelve dollars per thousand laid in the work.

Stone Culverts.

In some localities good stone is plentiful and cheap, and this fact, together with other local considerations, will make it seem best to construct stone culverts. In nearly every case rough rubble masonry will answer. Hard stone that will not absorb the moisture is well adapted to the purpose. The foundation must be perfectly solid and the work done in a careful manner. If the earth foundation is not satisfactory, concrete or plank should be used. Plank should only be used in a living stream where it will always be under water. If the foundation is not perfectly solid the settlements will cause a fracture in the masonry and render it unsafe. In laying the stonework plenty of headers should be used so as to give a strong bond. Strong stone should be used at the angles of the upstream end of the culvert to resist the action of flood wood and floating ice. The bottom of the opening should be concaved. Care must be taken to have the bottom of sufficient depth below the stream to prevent the water from getting underneath the foundation. Where the fall is very great it is necessary to make a shute or apron at the lower end to prevent the water from washing out the earth, and the bottom should always be below the frost line, and the top at least two feet below the top of the grade. Stonework should be laid in the best mortar composed of good hydraulic cement and clean, sharp sand. Where the openings required are larger than twenty-five feet, sectional area, these culverts should be made with an arch and the best masonry employed. The cost of the work will vary from $8 per cord of one hundred feet, laid in the wall of common rubble in small culverts, to $16 per cord, in large arch culverts.

Cast-Iron Culverts.

Cast-iron pipes for culvert purposes are coated with a solution of hot tar, and are almost indestructible and make an excellent culvert but of course are expensive. For small culverts cast-iron water pipes can be obtained, which are not sufficiently strong for waterworks purposes, at reduced cost. In constructing these culverts no skilled labor is required to put the pieces in place. All that is necessary is to dig the trench the necessary depth, giving it sufficient fall, secure a solid foundation, put the pipe together and see that the small end is placed to the full depth of the hub in the next pipe. This pipe can be procured up to five feet in diameter, and like culvert tile may be placed side by side if greater capacity than this is required.

The price of cast iron pipe at the foundry is as follows :

6	inch pipe	60	cents per foot.
8	"	95	"
10	"	$1 35	"
12	"	1 75	"
14	"	2 25	"
16	"	2 00	"
18	"	3 25	"
24	"	3 87	"
36	"	6 58	"
48	"	9 30	"
60	"	12 40	"

Road-making Machinery.

In view of the marvellous exhibition of human progress, and especially that part of which relates to applied mechanics, it is useless for us to assert that the history of this country is one of mechanical progression; and as almost every conceivable social and economical advantage which we enjoy is directly traceable, improved mechanical appliances are, and will be, very important factors in bringing about a better condition of public roads, and of greatly reducing the cost. A great many machines are now manufactured and in successful use in the building of streets and roads in Canada and in the United States.

Plow.

In breaking up the surface of a new or long travelled or partly macadamized road, it is very slow and expensive work when performed by hand, and to break this surface with ordinary plows is possibly more expensive on account of their not being able to stand the strain. Plows must be made especially for this purpose, the whole frame should be heavier, and certain parts upon which the strain is greatest must be increased sufficient to resist it, and it is necessary that these plows should be selected, by seeing that the parts are sufficiently strong to resist the strain which will be brought upon them by the class of work for which they are intended to be used.

Scrapers.

Experience teaches us that to excavate earth cheaply the less it is handled the better, and where the fill and dump is not far apart the drag scraper is the proper implement to use in this line—the lightest, strongest and the most endurable should be chosen; they require to be of the best material and to work in any soil, to enter the ground readily, and be easy on man and team. The solid steel drag scraper will be found to be the best.

Where the haul is so great that the expense is increased by the loss of time in moving a small load on the drag scraper, the proper implement for use is the wheel scraper, which saves a large amount of labor necessary in filling and dumping the wagons. These scrapers can be procured to carry at least one-half as much material as an ordinary wagon, and there is no loss of time in changing teams or unloading. With a wheel scraper the team can be constantly on the move, and one man will unload it with perfect ease.

Road Machines.

These implements, like all other machinery, should be made with as few parts as possible, in order that there will be less to get out of repair. The axle, tongue, braces or bale, cross truss, lever hanger, bowl or box should be made of first-class steel. They should be so constructed that the team does all the lifting and one man can easily fill, raise and dump the largest load by the operation of a lever. There is no strain on the horses' necks. The scraper is usually operated by the lever, which, when disengaged, lowers the bowl to the ground in position to fill, and the operator by the use of the handles of the scraper and the lever can cut as deep or as shallow as required in order to fill the box.

When filled, the lever is simply lowered and hooked, thus raising the bowl with its load sufficiently high to escape the ground. When the dump is reached the lever is raised until the point of the scraper catches the ground, this revolves the bowl, and the load is dumped. The ground, before the scraper is used, should be plowed deep, and no part left uncut to make it work properly.

In improving earth roads, or in preparing a roadbed for gravelling or metalling, where the material does not require to be hauled from one portion of the road to the other, there is no implement more useful, labor-saving and money-saving than what is known as the reversible road machine. This is a fitting example of the possibilities of ingenuity in the construction of road machinery—it is simple, durable and easy to operate, and so great in capacity that it cannot fail to give entire satisfaction in every respect when properly managed. In all the productions in the line of road-making implements, none have

obtained a higher degree of popularity or given more satisfaction to those who have used it than this machine. It is one implement which has added more than any other to the reduction of the cost of making and improving roads. The reversible road machine fills a long-felt want, and where yards can be made by hand, rods by the use of the road machine can be completed at the same cost; as the self-binder takes the place of the sickle, so does the road machine take the place of the spade and hoe. Besides doing so much more work, when properly operated, it will be done in a uniform manner. Of course these machines, like laborers, require to be properly managed in order to do the work economically; like all classes of machinery they may be condemned and discarded without receiving a fair trial, by having men to operate them who do not understand the machine and who have no interest in their work beyond putting in their day. Men instructed especially in the use of the machine should be employed to look after and operate it. If this is done and the instructions closely and carefully followed, there can be no question as to their advantage.

Rollers.

After the road machine has completed its work the whole of the road should be carefully and thoroughly rolled to a hard and unyielding foundation. This is as necessary for a good road as for building a bridge or any other structure. Rolling is essential in making this foundation, it consolidates all the loose earth which the action of the scraper has left in the line of the roadway, and it packs the material so that it will shed the water and carry all loads to which the road is subjected without destroying its surface. Great difference of opinion exists at the present time as to the proper weight of the roller to be used, but all who have studied the question are united in its necessity. Some argue that the heavier the roller the more effectual will be its work, and the expense of repeating the operation will be saved. Experience shows, however, that a roller weighing about five tons is the proper one to use in making good road foundations for improving earth roads. The object is to bring a sufficient weight upon the material to compress it so that every atom will be gradually worked into its place; this can be more properly done by repeating the operation than by attempting to perform it by once passing over. Compression made a little at a time can be reasonably compared with the hammer at the forge, light blows contract the fibres of the iron more closely than heavy ones, and increase the tensile strength materially. Light blows of the hammer in driving piles is the only known success. A five-ton roller can be easily operated by four horses and two men. It can be safely moved over bridges, etc. Additional weight means expense out of proportion to benefit. Rolling should begin at the sides and work towards the centre in order to preserve uniformity of the crowning.

Dump Wagons.

Dump wagons are now being constructed especially for this purpose. They are built low, making them easy to load, coupled short, light draft, and has no reach, so that they can be cramped short and turned in a short space. The hopper and box is made with a capacity of from one to one and a half cubic yards and is encased in a frame. The axles are made especially heavy and built to stand the wear and abuse, and are calculated to outlast three common wagons. They are arranged so that the driver can dump a load by pressing the lever with his foot without leaving his seat or moving his horses—the dump of the box stands at so steep an angle that it is impossible for any material to remain in it. Besides crushed stone, it can be used for hauling gravel, or in fact any kind of material not of a liquid nature. The use of this wagon saves a great deal of time and expense in loading and dumping.

The following rules will be useful to roadmen:

1. Never allow a hollow or rut or a puddle to stand on a road but fill it up at once.
2. Never put fresh stones on a road if by cross picking and a thorough use of the rack the surface can be kept smooth and at the proper strength and section.
3. Remember that the rake is the most useful article in your collection and that it should be kept close at hand the whole year round.

4. Do not spread large patches of stone over the whole width of the road, but coat the middle or horse track first, and when this has worn in coat each of the sides in turn.

5. Always arrange that the bulk of the material may be laid down before frosty weather.

6. In moderately dry weather and on hard roads always pick up the old surface into ridges six inches apart and remove all large and projecting stones before applying a new coating.

7. Never spread stones more than one stone deep, but add a second layer when the first has worn in if one coat is not enough.

8. Use a steel pronged fork to load the barrow at the stone heap so that the siftings may be available for binding and summer repairs.

9. Go over the whole of the new coating every day or two with the rake and never leave the stones in ridges.

10. Never put a stone upon a road for repairing purposes that will not pass freely in every direction through a one and one-half-inch ring and remember that still smaller stones should be used for patching.

Use fine stone screenings if possible for binding newly laid stones together, and remember that road sweepings, sods of grass and other rubbish when used for this purpose will ruin the best road in creation.

11. Remember that round or worn stones should never be allowed upon steep gradients so they will bind together.

12 Never allow dust or mud to lie in large quantities on the surface of the road for either of these will double the cost of maintenance.

13. Remember that the middle of the road should always be a little higher than the sides so that the rain may run into the side gutters at once.

14. Never allow the water tables, gutters and ditches to clog—keep them clear the whole year through.

15. Always be upon the road in wet weather and at once fill up all hollows or ruts where the water may lie.

16. The business of the pathmaster should not be so much to make repairs as to prevent repairs being required, as it is not so much a question of repairing a road after it is out of repair as it is to keep the road from getting out of repair.

17. See that the water outlets during the breaking up of ice are kept free from jams, to prevent as far as possible the flooding of the roadbed and consequent washouts.

Earth Roads.

Bad as they are, and difficult as it may be to make them much better, they will for some time be the only obtainable thoroughfare in many districts. It is of the highest importance that everything should be done towards the improvement of our earth roads. There is perhaps no subject that has perplexed our legislatures and all public spirited citizens more than this. A vast amount of what has been published about roads as in relation to this branch of the subject is rather indefinite. No practical plan has been devised to put a stop to the wasteful expenditure in connection with our country roads. Almost every township has a different system, but in all I believe the complaint to be the same. What is wanted is more honesty. If we employ commissioners honest enough to insist on a good day's work from those employed, the same as is required in private business, and men honest enough to do a good day's work, it would be an easy matter to remedy the evil in townships that are not now able to make permanent improvements.

A commissioner with two or three good men constantly employed in going over the roads of a township, making repairs as soon as they are needed and using a road machine where possible, would keep the earth roads in good condition.

It seems to be a universal opinion that an earth road when dried by the summer sun and worn into fairly good condition by passing vehicles, is as good a wagon road as can be had for the purpose of farm traffic. This is a mistake. Every dirt road sinks more or less at the point of contact with the wheels of a heavy wagon. If the road is composed of

soft material, the depression is of course greater, but whether of soft clay or gravel it always exists in some degree.

With reference to earth roads, the remarks already made as to draining, grading and forming the surface applies. Earth roads do not shed the surface water readily; the water tables should be kept about two feet lower than the crown of the roadway, which should not be more than twenty feet wide. The result of filling in the ruts with large stones is an extremely rough road. In all cases the material for the roadway should be uniform. No sods or vegetable refuse should be used in grading up crown of the road or in filling in ruts, but the earth chosen for the purpose should be as gravelly as possible. The transverse slopes of the roadway should not be less than one in twenty-four. In the case of clay roads, sand, old broken bricks, or even charcoal may be spread on the roadway to prevent the clay from sticking to the wheels; it is, however, almost impossible to keep a clay road in good order in wet weather, and the time and money spent in trying to do so would be much better invested in gravelling or macadamizing the road. A very sandy road will be improved by putting a little clay on it. There is nothing strikes a European more on his arrival in North America, than the excellency of the railroads and the inferiority of the common highways.

This inferiority may partly be due to the fact that the rich, both in the United States and in Canada, almost invariably live in cities where the roads are better kept, or else in the immediate neighborhood of towns which they can reach by rail. The country roads seem to be principally used by farmers to whom time seems to be no object, and who do not apparently realize that good roads can be profitable, since they do not actually place dollar bills in their hands, and who seem to think the only way to increase their income is to sell more produce, no matter how much it may cost to draw it to market, and accordingly they spend a great deal of their lives slowly plodding over bad roads without a thought of trying to improve them.

The surface of the road should be made as smooth and as hard as possible. The smoothness sheds the water readily and has least resistance to traction. Hardness prevents the formation of ruts, which is the first stage to destruction. It matters not whether the road be earth or macadam, if proper attention is not given to preserve the complete crown of the finished road, ruts will form which will hold water with the effect that on earth roads the wheels more readily cut. Water is admitted in different places to the roadbed, destroying its resisting power and finally making it impassable. In constructing earth roads the use of a proper road machine is advisable. In this way the natural foundation of the ground is not disturbed in rounding up the road, as is the case with the use of common plows and scrapers.

Each municipality owning a machine should have one man especially instructed and constantly in charge of it. There will then be no question as to the advantage of road machinery, both for repairing and constructing earth roads. The roadway should be from sixteen to eighteen feet wide, according to the amount of travel, and a strip of from two to three feet should be left between the gutter and the edge of the side ditches. This width of roadway should have a crown of at least ten inches. The road should be always maintained in this shape. After the road machine has completed its work the whole grade should be rolled with a roller weighing about five tons. Rolling is essential in making the foundation and surfacing to form permanent roads, and the argument in the one case holds good in the other.

Road Material.

The question of materials to be used and how to obtain them, is of the greatest importance in road-making, and often difficult to determine. It would seem to be a common notion with many who have essayed to enlighten the public on this subject, that stones suitable for road-making are obtainable on every farm, and all that is necessary is to encourage farmers to have them properly prepared at their leisure and delivered on the roads. On the contrary, though there is an abundance of stone on most farms, those suitable for making a first-class artificial road are quite uncommon. Stones gathered promiscuously from the surface of the field, though they may do very well to patch up a small piece of mud road, are most likely unfit to be used even on the poorest kind of

turnpike. If generally of a good quality they are sure to be mixed with soft and worthless ones which spoil the whole. Even where there are quarries of hard stone it is usually of stratified formation, with layers of different degrees of hardness, and even if generally good they are devoid of that uniformity which is so essential in making a good road. A quarry of road stone, to be worked to advantage, must be situated very near a railroad and have a track convenient for loading cars direct from the crusher. Breaking stone by hand will soon be a lost art. Stone for surfacing a road should be uniform and possess the greatest degree of hardness. The best measure of the quality of stone for this purpose is its power of resistance to crushing force, though it appears from experience that the qualities of hardness and toughness are not always the measure of the resistance to abrasion, or the wearing away by the contact of horses' feet or the wheels of vehicles. The material employed for stone roads should be both hard and tough. Hardness is that disposition of a solid which renders it difficult to displace its parts among themselves, thus, steel is harder than iron, and the diamond almost infinitely harder than any other substance in nature. The toughness of a solid, or that quality by which it will endure heavy blows without breaking, is again distinct from hardness, though often confounded with it. It consists in a certain yielding of parts with a powerful, general cohesion, and is compatible with various degrees of elasticity. The virtue of broken stone on roads lies not so much in the support it offers to vehicles as it does in the protection it affords to the natural soil by shielding it from the effects of moisture. The weight must really be borne by the natural soil, which does, in fact, carry the stone road itself as well as the carriage.

Some geological knowledge is required to make a proper selection of materials. The most useful are those which are the most difficult to break up. Such are the basaltic and trap rocks, particularly those in which the hornblende predominates. The green stones are very variable in quality. Flint or quartz rocks and all pure silicious materials are improper for use, since, though hard, they are brittle and deficient in toughness. Granite is generally bad, being composed of three heterogenous materials—quartz, felspar and mica, the first of which is brittle, and the second liable to decomposition, and the third laminated. The scientific granites, however, which contain hornblende in the place of felspar, are good, and better in proportion to their darkness of color. Gneiss is still inferior to granite, and mica slate is wholly inadmissible. The argillaceous slates make a smooth road, but one which decays very rapidly when wet. The sandstones are too soft. The limestones of the carboniferous and transition formations are very good, but other limestones, though they will make a smooth road very quickly, having a peculiar readiness in binding, are too weak for heavy roads and wear out very rapidly. In wet weather they are liable to be slippery. It is better economy to bring good material from a distance than to employ an inferior article obtainable close at hand. No large stones should be employed. Whenever a carriage wheel or horse's hoof falls eccentrically on a large stone it is loosened from its place and disturbs the smaller ones for a considerable distance round it, thus preventing their consolidation.

If too small the stones crush too easily; but on the other hand the less the size of the fragment the smaller the interstices exposed to be filled with water and mud, and the sooner will they make a hard road. For roads little travelled, and over which only light weights pass, the stones may be reduced to one inch in thickness.

Small, angular stones are the cardinal requisites. When of suitable material of proper size, and rightly applied to a well-drained subgrade, they will unite and consolidate into one mass almost as solid as the original stone, with a smooth, hard and unelastic surface. The stones should be as nearly cubical as possible, the largest of which in its longest dimensions can pass through a ring three inches in diameter. In reducing them to this size there will, of course, be many smaller ones in the mass.

Twelve inches of well consolidated materials in a good condition will be sufficient for roads of the greatest travel, and will resist all usual weights and frosts. MacAdam considers from seven to ten inches sufficient, the latter depth of well consolidated material being equal to carry anything. In the climate of France ten inches has been shown to be quite enough for the most frequented roads; a band six and eight inches enough for others. The thickness should vary with the soils, the nature of the material and the

character of the travel. It should be such that the greatest load will not effect more than the surface of the shell, and it is for this purpose chiefly that thickness is required in order that the weight which comes on a small part only of the road may be spread over a large portion of the foundation.

Earth roads as main thoroughfares will soon be a thing of the past, and the time will soon come when such roads will give way to stone. They cost more in the first outlay, but are much cheaper in the end. In order to obtain material in municipalities where rock is to be found, they should have in their possession one or more rock crushers. These machines should be simple in construction and light in weight, yet possessing the important qualities of strength, durability and efficiency. For the last fifteen years manufacturers have been making improvements on these machines, so that to-day those manufactured cannot fail to give results which will prove their value. The amount of product obtainable from any crusher is governed by the fineness to which the stone is crushed, the speed at which the machine is run, the diligence with which it is fed, and the character or quality of stone used, varying from ten to twenty tons per hour. They are usually mounted on trucks for portable use, and are moved and operated along rivers and streams where bolders are abundant. A suitable attachment to these crushers is an elevator, which carries the material to the top of the bins, roughly constructed to hold the product, which passes through a screen, dividing the material into three grades, depositing each in a separate bin. These bins are provided with shutes, which are constructed at sufficient elevation above the ground to permit of a wagon passing underneath to receive its load ; the shute is opened and the wagon filled without any cost. These machines cost from $600 to $1,000. In the construction of these roads there are a few points which would seem to bear investigation. One of these is whether the material used in surfacing the road should be broken small of uniform size, or should have a foundation of large stones covered with those finely broken The first of these systems, called macadamizing, has derived its name from one who has, perhaps, done more than any other to enlighten the world on the subject, and give an impetus to the improvement of roads. Stone roads, before the time of MacAdam, with a few exceptions, were made without any pretence of scientific construction, and were composed of stone laid promiscuously, and through which horses and vehicles could clamber without actually sticking fast. These were described by writers of the times as the most horrible invention that could be conceived. MacAdam, though not first to discover the advantages of having the surface of roads covered evenly with stones broken small and of uniform size, was the first to bring this system into prominent notice, and, being very energetic and persevering, he succeeded in creating a complete revolution in road-making, not only in Great Britain, but in the civilized world. In building stone roads in St. Thomas, the stone was supplied from the quarries in three grades of coarseness. 1. Screenings, consisting of the stone dust and small particles of stone not over five-eighths of an inch in diameter. 2. Egg, consisting of what passes over the five-eighth screen, and will pass through a one and a half-inch screen. 3. Tailings, or what is too large for the one and a half-inch screen, averaging from two and a half to three inches in size. A first coating of the largest size six inches thick in the middle of the road and four inches thick at the sides, is laid on a prepared subgrade, and rolled until it is well consolidated. If possible it is well watered or advantage taken of wet weather, to facilitate the binding of the materials. This is coated over with stone of the second size to a depth of three inches, and the road is again thoroughly rolled. On this is placed a layer of screenings sufficient to fill the surface interstices between the stones and to cover them. This last coat, like the preceding one, is watered and well rolled. In place of screenings, fine gravel or very coarse river sand may be used, but on no account fine or dirty pit sand is admissible. Coarse pit sand may be allowed after having been thoroughly washed, so as to remove all earthy matter and the finer particles of sand which could work down between the stones and prevent them from binding, and thereby convert the macadam in a short time into a loose mass of rounded stone little better than ordinary gravel. The great object is to cause the stone to consolidate under traffic into a fine, compact and smooth roadway. If any loose earth or other fine material be mixed with the stones they cannot become so consolidated.

Burnt Clay.

Burnt clay has not as yet been used very extensively in building roads, and therefore experience has not proven its merits as a road material. Railroads have used it for ballast with great satisfaction, and a great many competent engineers, after studying the question, believe that it will make a road equal, if not superior, to macadam or gravel, at a much less cost. Wherever it has been used for road purposes it appears to be giving good satisfaction. The distinguishing characteristics of it are such as to make us believe that it is a good thing for a road. Clay, for this purpose, of course, must be carefully chosen and be free from sand.

One process of manufacturing is to make long rows of the clay with soft coal mixed much like a coke oven. The rows are fired and tended so that they burn uniform, and when the fire goes out the clay will have been completely burned. The material is porous and highly absorbent, and can be easily settled into a firm mass without being packed as stone or other material. It will not support vegetation, and if properly laid with a crown, it will not allow water to stand upon it. It will stand a great deal of wear, and will not deteriorate; it is to a certain extent flexible, and resists crush to a remarkable degree, and if twelve inches of this material were placed on top of a well drained and properly made dirt foundation, it will make an excellent road. It certainly will require careful attention in order that ruts may not be formed, and a stock of the material should be kept at hand, so that any breaks in the surface can be readily filled. While this is necessary, we do not believe that the material will rut as quickly as gravel or macadam, but the effects of water, standing in the ruts, may be more destructive. In this western part of the province where there is plenty of clay suitable for the purpose, a road can be made very cheaply, as the cost of manufacture would be small.

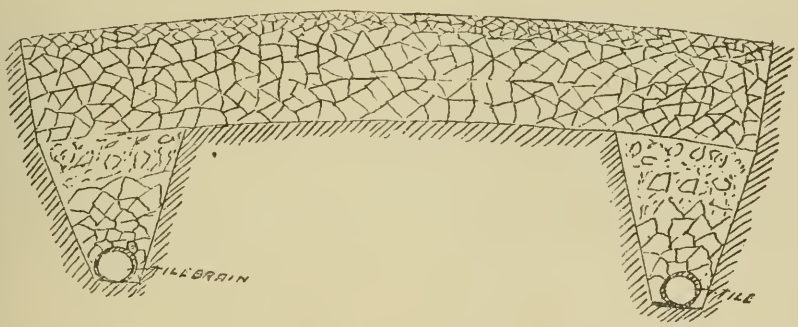
Another plan, and the one commonly used, is in summer weather, and during the hot season, to cut out the soil in the proposed road, to a depth of two feet, into large spits, laid roughly one upon the other, and left in that condition for about ten days. So soon as the spits dry they are submitted to the action of fire in the following manner: A circle is formed, twenty feet in diameter, surrounded by a wall made of the roughest and largest spits two feet high, in the enclosure thus formed, straw or other light combustible material is laid, small pieces of wood are placed on these and over them are placed other spits so as to form a cone or pyramid, the whole structure to be about eight feet high. Fire is then applied to the several parts at once, due care being taken that the spits sink evenly until the whole mass is well alight. After being well banked the mass is left for a day or two and as soon as it attains a good red appearance is drawn down, the wall broken and the spits thrown out. Others are added as required from day to day until all the earth dug has been submitted to the same process. In a length of one hundred yards of road thus served it would take about six fires to burn the 12,000 cubic feet contained therein, the cost of labor would probably be twenty-five cents per cubic yard. The burnt clay is then, after cooling, relaid upon the road and forms the middle section, and will last for years.

Charcoal.

The novel expedient of using charcoal for road covering is not likely to be resorted to except in heavily-wooded districts where standing timber has no market value, and must be removed before the land can be cultivated. Take timber from eight to sixteen inches in diameter and twenty to twenty-four feet long, and pile it up lengthwise in the centre of the road, about five feet high, being about nine feet wide at the bottom and two feet at the top, and then cover it with straw and earth in like manner to coal pits, the earth required to cover the pile being taken from either side leaves two good sized ditches. The timber, though not split, is easily charred. The earth is then removed to the sides of the ditches; the coal raked down to a width of fifteen feet, leaving it two feet thick in the centre and one foot at the sides, and the road is completed. The material is found to pack well, not forming into ruts or getting soft or spongy in wet weather. This kind of material for road covering is useless unless the roadbed is thoroughly drained and the crown of the road surface maintained.

Macadam Roads.

The peculiar system of MacAdam consisted of having all the stones on the roads he constructed broken quite small—six ounces in weight being the limit—and after the road was properly graded so as to ensure proper drainage and a slight convexity of surface these were spread over the ground at a depth of from five to ten inches without laying on any admixture of earth or gravel on pretence of binding and never with stone or any special foundation. He persistently insisted that clear broken stone will combine by its own angles into a smooth, solid surface that cannot be affected by vicissitudes of weather or displaced by the action of frost. MacAdam always contended that stones laid in this manner would, with the travel over them, become bound together so firmly and compactly as to become entirely impervious to water. This he contended was the whole secret of road-making, the great object being to keep the earth dry, the only use of the stones being to form a roof for this purpose. He contended that the ground was the road and must bear the weight of the stones as well as the vehicles passing over it, and



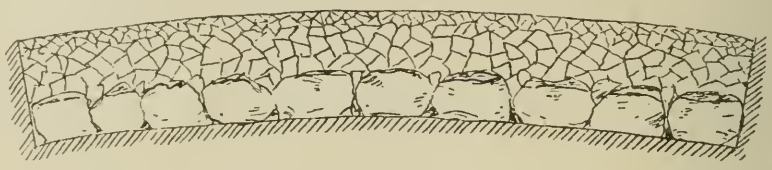
held that nothing can make as good a road as dry earth, and that the thickness of the coating should only be regulated by the quantity of material necessary to form such impervious covering and never by reference to its own power of carrying weight; and he further contended that the wear of the road through travel over it is very much greater where the surface coating is underlaid with an unyielding substance, as on rock, than when on a slightly elastic foundation such as dry earth, and for this reason he always objected to a stone foundation of any kind, and insisted that these tended to let in water to the earth below, which was the destruction of the road. He always considered such a foundation to be a useless and unnecessary expense, but experience has proven it to be positively injurious. For the same reason he never allowed any clay or other substance mixed with the stones, as he said it tended to make the coating more pervious to water.

Telford Roads.

These roads are made with a foundation of large stones covered with those finely broken, and are the most common in this country. They differ from a road made of stone broken small and of uniform size in having the foundation first made in the shape of a roughly made pavement of stone six or eight inches in depth, this being first covered with stone coarsely broken and then with a coat broken quite small and afterwards covered with a coat of gravel or screenings from the crusher and the whole compacted with a heavy iron roller. It is the practice to mix some clay with broken stone in making this kind of a road to help combine the whole in a solid mass. When properly constructed they are the best for country districts. A Telford road is the least costly and lasts as well or better than any other. In this climate, where frost is liable to penetrate very deep, it is doubtful whether the covering that MacAdam specifies would be sufficient.

Where a depth of a foot or more of stone is necessary, if one half of these may be of unbroken stone and of cheaper quality—as is allowable in Telford roads—a considerable

saving may be made in the cost, and it does look reasonable to suppose that a foundation of large stone, if properly laid, will resist the tendency of heavily laden vehicles to press them into the earth and form ruts on the surface. We can only reconcile the theory of Macadam, that a mixture of any kind of refuse with the stone is unnecessary, and positively hurtful, on the supposition that his experience was not with stone of the hardest and best quality. We consider it probable that in his experience, which consisted largely in lifting the stones from old roads and having them finally broken and properly replaced, that much of this material was of a kind that soon ground up with the traffic over them



and afforded material for consolidating the mass. Experience shows that when the material used is not of the best quality, it will consolidate more readily than that which is harder and better.

It may now be considered as settled that where the best quality of furnace slag is used, screening from this or some other substance must be added to consolidate them. And again, when we consider that the interstices in a body of loose broken stone comprise one-half the bulk of the mass, and when pressed as solid as it may be, the open spaces comprise one-fourth of the bulk of the mass. It is hard to conceive how this can be impervious to water, unless the crevices are filled with something.

Cost of Construction.

The side ditches should be, on an average, two and one-half feet deep, two feet wide across the bottom, and with side slopes of one foot horizontal to one foot vertical. This would be four and one-half cubic yards to the lineal foot. Twelve cents per cubic yard is a fair allowance for this class of excavation, making the cost $211.20 per mile for drains on both sides of the road. With the use of proper grading machines, managed by two teams of horses and two men, at a cost of $8.50 per day, allowing forty rods for a day's work, would be $68 per mile. With the additional manual labor to fix the roadbed, make trenches, etc., say $125 per mile. In all cases the cost of draining and grading will be the same. Where the gravel can be obtained within five miles of the work, it will cost $3 per cord to team it, 50 cents per cord for the gravel and 25 cents per cord for spreading, making the total cost of the gravelling $3.75 per cord on the work. If gravel cannot be obtained within this distance, its use is not advisable. Flake stone for foundations can be secured at the quarry at 75 cents per cord; teaming the same at an average distance of five miles, $3 per cord; laying, 50 cents; making the total cost of the flake stone foundation $4.25 per cord. Crushed stone at the quarry costs $3 a cord. The total cost will be $6 per cord when procured within an average haul of five miles. If necessary to freight it fifty miles, $1.75 must be added to this estimate. Two teams and two men, taking the work in long stretches, would thoroughly roll one mile of road in a day. Allowing for this $10, the estimates for the different roads will, therefore, be as follows:

Earth roads:

Excavating 1,760 cubic feet in ditches, at 12c. per yard..	$211 20
Grading, eight days, with machine, at $8.50	68 00
Labor on cross trenches, and finishing grade	60 00
Rolling	10 00
Commission expenses	25 00
	$374 20

Gravel roads (material obtained within five miles):

Draining	$211 50
Grading	125 00
250 cords of gravel at $3.75 a cord	937 50
Rolling	10 00
Commission expenses	50 00
Per mile	$1,334 00

Gravel roads, with flake stone foundation (material obtained within five miles):

Draining	$211 20
Grading	125 00
250 cords of gravel and stone	1,000 00
Rolling	10 00
Commission expenses	50 00
Per mile	$1,396 20

For freighting stone where necessary, add to this $281.25, making the cost $1,677.45 per mile.

Broken stone (material within five miles of the work):

Draining	$211 20
Grading	125 00
200 cords of stone at $6	1,200 00
Rolling	10 00
Commission expenses	50 00
Per mile	$1,596 20

For freighting, fifty miles, $350. Total, $1,946.20.

A crushed stone road would cost from $1,596.20, say $1,600, to $1,946.20, say $2,000 per mile, according to the length of haul. A safe estimate of average cost per mile of first-class road is $1,800. This, at the present prices, with a limited demand, would be considerably reduced by the increased amount of work to be done.

Railway companies will certainly reduce the cost of carrying material, on account of the intimate relations between the railways and highways. So far as artificial roads are concerned, almost everything depends upon the facilities afforded by the railroads for hauling the required material at a moderate cost. Without this the making of first-class roads would in general be expensive. There are many liberal-minded railroad officials who are far-sighted enough to see that the prosperity of their railroad is largely identified with the prosperity of the country contiguous thereto, and knowing that the common roads are the natural feeders of the railroads, are disposed to aid all they can in their improvement.

In constructing permanent roads it is necessary to avoid running into extremes, either in the amount of work to be done or the material to be employed. The convenience and relative value of the materials at hand for affecting the improvements should be considered. All culverts, bridges and abutments should be made as permanent as practical. The work of construction should be continued over a number of years, and the payments over a long term—say forty years. Those who come after us will reap the benefits of these good roads, and there is no injustice in asking them to pay part of the cost. There is ample skilled labor to perform the work, and the money can be raised in the manner stated. Every other enterprise in public improvements finds sufficient capital to put it through. It is freely admitted that there is no way in which money can be spent that would afford better returns to every part of the community.

To illustrate how these figures would apply to township municipalities, the following estimate of cost of improving 175 miles, being the road mileage at present maintained in

the township of Yarmouth, in the county of Elgin, has been prepared by A. W. Campbell, city engineer of St. Thomas, and will form a basis for calculating the cost of the different kinds of road in any municipality.

175 miles at $1,800 per mile	$315,000 00
Equal annual payments, four per cent. thirty years	18,216 45
Maintenance, at $20 per mile	3,500 00
Total yearly payment	$21,716 45
Present maintenance, including statute labor at $1 per day	9,000 00
Thirty years' actual extra rate	12,716 45
Total	$21,716 45

Total acreage in township, 70,000.

Assessed value, $2,700,000; per 100 acres, $3,850.

Estimated actual value, $4,000,000.

Extra rate required for annual payment, four and three-quarter mills.

Estimated increase in value of property, 10 per cent., $400,000.

In constructing 175 miles of stone road, 50 per cent., or $157,500 would be expended for labor that could be performed by the ratepayers. This would be equal to $225 per each 100 acres.

The roads would cost $315,000, of which $157,500 would be spent in the township. The property would be increased in value $400,000. Taking these figures into consideration, the township would be benefited to the extent of $242,500, over and above the cost of constructing the roads.

Existing Gravel Roads.

On a number of roads throughout the country, municipal councils have expended considerable money in reducing grades and putting on gravel, but in the majority of these cases gravel has been put on without any attention being paid to the reduction of grades or the proper formation of the roadbed. It has been found that these roads rut deeply in the wet season and consequently are rough and unpleasant to drive on during the remainder of the year.

A remedy for such roads is:

1st. Have the road properly drained, according to the specifications herein given for the construction of new roads.

2nd. By the use of a road machine and a gang of men, commence at the edge of the gravel and work to the gutters as hereinbefore described, leaving the road crown as if building a new one. See that the gutters have proper and uniform fall for the surface water, and that the trenches are made leading to the side ditches.

3rd. Put on a sufficient quantity of the best gravel obtainable to complete the crown of the road, and carefully watch it with a rake until it has become perfectly consolidated by the travel.

4th. Never neglect to see that the rake is sufficiently used to prevent the formation of ruts and maintain a proper crown to the road so as to secure the shedding of the water.

5th. Where grades are steep and irregular and can be reduced at reasonable cost, it is advisable to make such reduction before expending any further money in material or grading, in which case the present gravel should be taken up and laid to one side, so that it may be relaid, but generally where there are slight changes it is not advisable to break up the old foundation in order to secure perfect uniformity in grade.

Gravel for Roads.

There are two kinds of gravel—one that will pack under travel, and clean, rounded gravel which will not. This is due to a small proportion of clayey or earthy matter con-

tained in the former which unites and combines the material together. Seaside and river-side gravel consisting almost entirely of water-worn and rounded pebbles of all sizes which easily move and slide upon each other is unsuitable for road covering unless other materials be mixed with it, while pit gravel usually contains too much earthy matter. The gravel for the top layer at least must be hard and tough so that the wear will not pulverize it and convert it into dust and mud. It should be coarse, varying in size from one-half to one and one-half inches in diameter; it should not be water-worn and should contain enough sandy or clayey loam to bind it together firmly. Pit gravel usually contains so much earthy material that it should be screened to render it entirely suitable for the surface layer. For this purpose two wire screens will be necessary—one with the wires from one and one-half to one and three-quarter inches apart. The pebbles which do not pass the large screen are to be rejected, or if used should be broken up into small fragments, while the earth, small gravel and sand that pass the smaller one, although not suitable for the road surface, will answer for a bed for the road material to rest on. If the bed of the road is rock, a layer of earth should be interspersed to prevent the too rapid wear of the latter. In ordinary soils an excavation to the depth of six or eight inches, and of the required width, is made for the reception of the gravel. The surface of this excavation, called the subgrade, may be made level, or preferably it may be arranged parallel to the finished road surface by sloping it from the centre to the sides. A layer four inches thick of good unscreened gravel in its natural state should be first spread upon the roadbed which is then thrown open to travel until it becomes tolerably well consolidated.

The remainder of the material should then be put on and kept properly in shape with a rake until thoroughly compacted, which can be hastened by the use of a five-ton roller. On ordinary country roads gravel eight feet wide and nine inches deep is sufficient.

Maintenance.

Earth road should be kept smooth, hard, up to grade and cross sections by the addition of suitable materials at frequent intervals and in small quantities at a time, on all places out of grade, securing a surface that will quickly convey the water to the side ditches. The latter should be kept open, of uniform and sufficient slope, free from rocks, ridges, depressions, and continuous to some natural or artificial outlet. As regards the maintenance of a road of this class it seems hardly necessary to say that the way to keep it good is never to let it get bad. In nothing is the old adage "stitch in time" more applicable. Every improved road should be watched over by a careful superintendent, with material always at hand to level up and smooth over all inequalities as they appear. This is not only the best, but it is by far the most economical method of keeping a road in repair, for there is nothing more deeply demonstrated than that the wear of a road increases in a geometrical ratio as its condition deteriorates. It will, however, sometimes happen, where the travel is very heavy and continuous, that the road will become so worn as to require a complete resurfacing. The surface of the old bed should be slightly loosened up with a pick before the new material is spread on, so that the whole will combine better and form a solid mass. There are now machines for doing this in the shape of a steam roller with a pick attachment, which are said to do the work better at a great saving of labor. The advantage of compacting a road with the roller before it is used for traffic is so obvious as to require nothing more to be said on it. If not done with the roller it must be done with the travel, which is bad for the road, as it wears away rapidly in the process—and bad for those who use the road to be compelled to do at their own cost what should be done by those having charge of construction.

The friction or resistance to draught on a road with deep ruts and thick mud is four times as great as on one in good order. This shows the importance of a perfectly kept road. An incidental advantage is that the prompt removal of the mud after every shower will prevent the annoyance of dust so generally an objection to roads, but not at all their necessary concomitant.

A road kept up by daily attention needs no repairs, but if it be put in order only at intervals the injuries to it would have been increased in geometrical progression, which render very serious repairs necessary. It will be found cut into ruts, deep holes and

irregular projections, and often lower in the middle than it is at the sides. It must be put into shape and restored to its proper cross section by cutting down the sides and filling up the middle parts. Only a single thin coat of stone should be applied at one time—not more than a cubic yard to a rod superficial. The surface of the old road may be lightly picked or lifted with strong short picks, merely burying the point one or two inches deep so that the new materials may be more easily united to the old ones. This is especially necessary on declivities to prevent the stones rolling down the slopes. When the road to be repaired is one which has been originally formed of large stones and of superfluous thickness no new material should be brought upon it, but the old stones should be loosened with picks, gathered with strong rakes to the side of the road and there broken to the proper size. The surface of the road having been put in proper shape, the broken stone is to be returned to it, being scattered uniformly and thinly over the surface. Only a small piece of road should be thus broken up at once, but the whole width. The old plan of repairing would be to fill up the holes with an additional supply of the same large materials. But the methods here recommended make more work for men and less for horses and produce a great saving of expense.

The best season for repairing broken stone roads is in the spring or early summer when the weather is neither very wet nor dry, for either of these extremes prevents the material from consolidating, and therefore produces either a heavy or dusty road. If made at this season the roads are left in a good state for the summer, and become consolidated and hard, so as to be in a condition to resist the work of the ensuing winter.

If several depressions are found very near each other, cover the worst and attend to the next after the first has become solid. The ruts which are formed should not be filled with loose stones, for this would make longitudinal ridges of harder material, but the laborer should work the rake backward and forward on each side of the rut and across it; and if he does it with his eyes shut he will do more good than by taking pains to gather all the stones he can find to place in it.

The number of men required by this system of constant watchfulness may at first seem an objection, but the expenses will be amply repaid by the advantages obtained. Each laborer should have a certain length of road assigned to his special care, and the most intelligent and trustworthy among them should be made inspectors over the others for a certain distance. At times unfavorable for work on the road they should be employed in breaking stone.

With a reversible road machine, properly managed, five miles of well graded and well drained earth road can be repaired. This operation should be repeated once a month for eight months in the year, and in the case of a properly made and properly drained gravel road ten miles can be repaired in one day. With a stone road, however, the repairs should be made by manual labor, one man being able to rake and keep in proper repair twenty miles of road by working six months in the year. The cost of repairs for the different kinds of roads would then be fairly estimated as follows:

Earth roads (five-mile sections).

Two teams on machine at $3.00 per day for eight days	$48 00
One man to operate at $1.50 per day	12 00
One man cleaning drains, etc., for sixteen days at $1.25	20 00
	$80 00

or $16 per mile.

Gravel roads (ten-mile sections).

Two teams on machine for eight days at $3.00	$48 00
One man to operate at $1.50 per day	12 00
One man cleaning drains for thirty-two days at $1.25	40 00
New materials for repairs	200 00
	$300 00

or $30 per mile.

Stone roads (twenty-mile sections).

Services for one man for eight months at $25.00	$200 00
Material for repairs	100 00
One man cleaning drains, etc., for	80 00
	$380 00

or $19 per mile.

Broad Tires.

It will be some years before all or even a majority of our country roads will be improved by gravelling or macadamizing, but in the meantime it is necessary to urge the adoption of some means to keep the ordinary earth roads from becoming impassable for a few months during the wet season of the year. One important move in this direction would be the use of broad tires on all vehicles used for hauling heavy loads. The only difficulty in the way of this is to get farmers and teamsters to make the change. Michigan law makers realized this and have made a law which provides that a man using on his wagon tires of a certain width shall have a rebate of one-half of his road tax. In buying a new wagon the difference in cost is slight, as the wider tires may be thinner and the added strength in the wider rim makes a stronger wheel. To take from a wagon already in use the narrow rims and tires and replace them with wider ones only costs about $15. Farmers who have had experience in broad tires assert that in a cornfield where thirty bushels was considered a good load on narrow tires, they can haul fifty bushels with greater ease on broad tires. When hauling stuff to market the load with wide tires can be increased from twenty-five to fifty per cent. In localities where a considerable portion of the inhabitants use broad tires the road is kept in better condition than when narrow tires prevail. The advice of men who are in a position to know is that when broad tires are universally used on highways of all kinds, from city pavements to the poorest earth roads, they may be kept in better repair than at present at one-fourth the cost. The greatest improvement for the least outlay is what the present generation is most likely to consider.

Legislation looking forward to the general adoption of wheel tires proportioned in width to the maximum load to be carried is something that should be taken hold of at once. Such a law made universal would greatly improve our roads, and as fast as they are made better, would tend to keep them so. The great objection to the adoption of broad tires by degrees, and the use of them at present, is that wagons fitted with them run hard over a road where the narrow tires are mostly used, but when all wheels are what they should be, ruts will not be found cut deep in our roads as with a sharp instrument. Teamsters say that they would be glad to use broad tires and would willingly go to the expense of making the change if everyone was compelled to do so. Make wrongdoing in this direction illegal and at the same time show to the wagon owner who is not already convinced in this matter that it is directly profitable to him to comply with the law. A man willingly becomes a law-abiding citizen when he can make money out of it. The money now expended for roads would be twice as effectual if it were not for the constant abuse inflicted by narrow tires, and this will continue until the question is settled by the Legislature. Upon a hard and well-made road, such as broken stone, there is not so much difference in the effect of broad and narrow tires, but on a common road narrow wheels supporting heavy weights exercise a very destructive cutting and plowing action. This diminishes as the width of the felloe increases, which in many cases is done to such an extent that the wheels act as a roller in improving instead of injuring the surface. For this reason the New York turnpike laws enact that carriages having wheels of which the tire or track is six inches wide will pay only half the usual tolls; those with wheels nine inches wide only one-quarter; and that those with wheels twelve inches wide shall pay none at all.

The imperfect surface of an earth road makes it doubly important to take every precaution to lessen the friction of vehicles upon it. The resistance decreases as the breadth

of the tire increases on compressible roads, as earth, sand, gravel, etc., while on paved and broken stone roads the resistance is nearly independent of the breadth of the tire. Cylindrical wheels also cause less friction than conical ones. The larger the wheel the less friction they have, and the greater loss of leverage in overcoming obstacles. The fore-wheels should be as large as the hind oneswere it not for the inconvenience of turning. The axles should be straight and not bent downward at the end which increases the friction, though it has the advantage of throwing the mud away from the carriage. The load should be placed on the hind wheels rather than the fore ones.

The felloe should have a flat bearing surface and not a rounded one. The benefits of broad wheels are sometimes destroyed by overloading them. Narrow wheels are particularly injurious when in rapid motion, for, having less resistance and greater velocity than others, they revolve less perfectly and drag more, thus producing the worst effect. Conical wheels, of which the inner is greater than the outer in circumference, tend to move in a curve, and being forced to proceed in a right line exert, a peculiarly destructive grinding action on the roads. If a law of this kind were adopted to take effect say two years after its passage, the people would at once agreeably commence to make the change, and by that time no hardship would be felt.

Mr. Silas Zavitz: How do you propose to lower the water line; by a drain in the middle of the road-bed, a system of drains, or how?

Mr. Campbell: I think it better to use tile drains and to put one each side of the metal. This answers every purpose and can be more readily got at if repairs are necessary. But this is necessary only in soils of a retentive character. Where the soil is loose and open, all that is required is an open ditch.

Hon. Mr. Dryden: Is not tile drainage an advantage everywhere?

Mr. Campbell: I do not know that it would be. The principle is to keep the road-bed as dry as possible, either by ditches or tiles.

Mr. Silas Zavitz: My experience has been that the under-draining of clay soil has a tendency to keep the ground dry and loose. I have noticed that, after a heavy rain on clay roads, if you dig down a little way you will find the ground solid. It appears to me that a drain in the centre would have a tendency to keep the soil loose. Under-draining on farm lands has that effect. It appears to me that if drains were placed on each side as you say it would be sufficient even on clay soils to carry the water off.

Mr. Campbell: I might say in reply that the paper I have read is more for the purpose of eliciting discussion and to bring out the experiences of the delegates present than it is in the hope of making you believe that everything I state must be a fact, because that does not necessarily follow. (Laughter.) I would like to say that good roads have been and can be constructed by pathmasters, but I claim that money has been wasted, labor wrongfully directed, so that we are not getting value for the labor and money expended.

A Delegate: Would the expenditure of the money you suggest put a dollar in the farmer's pockets? Would it increase the price of wheat?

Mr. Campbell: It certainly would by decreasing the cost of transportation.

Mr. Pattullo: The gentleman asks whether improved roads would increase the price of wheat. Certainly—not directly, perhaps, but it would decrease the cost of taking your wheat to market. Mr. Campbell was discussing this question at the Dairymen's Convention the other day when a gentleman connected with that business said that there is no one in this country that the question of roads affects more than the person engaged in the dairy business. "In the factories I run," he said, "it costs the farmers $11,000 for hauling the milk to the factory. I control eight or nine factories. If you would only make the roads as good as you might, that cost would be reduced by half." It might not increase the price of cheese but it would increase the farmers' profits on the production of the cheese.

Prof. Robertson being present, was called upon for an address. He said: I am very glad to have an opportunity of attending this session to-day, because I recognize that asso-

ciations and other bodies such as this can do a great public service. The people settle for themselves how they should do everything. I would rather have the people build bad roads and build them themselves than have someone else come and build good roads for them. I would rather have my little boy write me a letter full of blots than have some one else write it for him. This Association can serve the province not merely by forming public opinion in favor of good roads, because that now exists, but by directing public opinion as it should be directed. We shall have for a long time to come twenty miles of soil road for one mile of macadamized road with all our progress. Now in the dairy business I find that soil roads are a great obstruction to milk wagons, so much so that men who live four miles from the factory are frequently discouraged from sending their milk because of a soil road with a few bad holes. I think the Association might do the best of service by instituting a series of short talks by practical men between pathmasters and farmers as to how such difficulties could be gotten over, and also by issuing systematic bulletins as to how soil roads might be improved.

I am sorry that the people who are so urgent and earnest in the desire to mend their ways should have come to Toronto to learn how to do it. If you had come to Ottawa you might have had a better chance of success, as there you might have met delegates from some of the other provinces as well. I believe that both in Nova Scotia and Prince Edward Island different methods are employed to those of Ontario. I do not believe that farmers could not pay for making the roads. I will give a personal illustration. I live on a farm and do not do any road work now-a-days; I am worth more, and I know lots of dairymen who would rather pay a dollar a day than do the work.

The dairy business owes much of its manifest success to the meetings of the dairymen's associations, which at first did not attract much attention, but the movement was good and gave good information. I hope this Association will serve a similar function with regard to roads, till we have the best of roads, which means a great deal in the interests of the home and of civilization generally. (Applause.)

Mr. Zavitz: I am a small maker of cheese. We have agitated this question in our township till we have a road machine, and used it last summer on clay roads. We have reared up a perfect oval with this machine, and it gives good satisfaction. The water is carried off by a ditch on each side, which plan is, I think, corroborated by Mr. Campbell.

Mr. Fitch: I do not think that one township can prescribe a system for another township. I do not care how you get the water off the road so long as you do it. I do not think that side ditches are any use. What we want on the roads is an under drain in the centre.

Mr. Jas. McEwing, President of the Central Farmer's Institute, then being called upon, spoke as follows: We are met to discuss a very broad question and I am pleased to see so many more here at this meeting than were present at the first meeting of the Association one year ago. The first thing requisite in the discussion of this subject is to find out how best to make and maintain our highways, and next, how best to provide the money and labor required. I would like to enter a strong protest against one or two of the suggestions contained in Mr. Campbell's paper. He suggested, for instance, that the Government go into a sort of partnership with municipalities in the way of issuing or guaranteeing debentures of the municipality or loaning money to the municipality for the purposes of building roads. I have several reasons for objecting to this course. I think the old saying is a good one that "the Lord helps him who helps himself," and this is just as true with regard to communities as individuals. I object to another point taken by Mr. Campbell in his paper, viz., that the large amount expended in building those purposed permanent roads would be a good thing for the community at large by giving employment and putting a large amount of money in circulation. Now I say that if the money expended did not cost the people at large anything it would be a good thing, but who is going to pay the money if it is not the community? If the Government loans you the money, you will have to pay both the interest and the principal. We know from actual experience that we have received an immediate benefit during the past two decades by the large expenditure on public works in this country; it brought

a large amount of money into circulation, but have we not to pay more interest as our indebtedness increases? It is not all clear profit by any means, although we may have gained largely in some cases.

We hear a great deal said about the present system of road-making being wasteful. No doubt it is, but I do not think farmers are prepared to cast it aside till something better offers. I do not think that to ask the Government to loan large sums of money to build permanent highways would be any great improvement. The people of this country may build, but cannot maintain at reasonable cost, permanent highways such as have been referred to as existing in other countries. Neither are such roads required in this country, the conditions being so different with us. You know that for a great portion of the year the highways are entirely covered with snow, and in the summer time there is no better road for the ordinary traffic of the country than the ordinary clay road properly constructed. It is not a good business principle to talk about inducing the country as a whole to go into an extensive system of borrowing money to build permanent roads, when such roads are not necessary and it is so difficult a matter afterwards to maintain them.

There is no question about the interest taken in the question of good roads, but I would like some feasible plan to put before the public. The larger portion of this province is now well supplied with railway facilities, and in districts which are not so well supplied with such facilities, I think the electric railway system will solve the difficulty in the near future. I think the Association is doing a good work in stirring up public opinion in regard to improving our highways. I know that in my section of the country the highways are improving very rapidly indeed.

With regard to some of the statistics given as to the amount of money expended on roads in many of the municipalities, I believe it covers bridges as well. Perhaps not, but I believe that, on the whole, the roads of the province are being greatly improved notwithstanding the evils and wastefulness which oftentimes occur under the present system of management.

I think you should give the matter thorough consideration, but by all means avoid striking the rock that we struck so severely in the past under the old municipal loan fund arrangement. Depend upon yourselves. See after your own roads. There is no man in a better position to see after a road than the man whose house and property adjoins that road. If the electors would use good judgment in the selection of councillors, they would appoint only the best men on the road division as overseers and retain them in that position for a term of years. Then we would have the roads fifty per cent. better than they are to-day without any extra expenditure. (Applause.)

Mr. Edward Jeffs: I would like to say that I am delighted with many things set forth in Mr. Campbell's paper, but no effort was made to show that these roads could be kept up after they had been constructed. With our climate it is impossible to keep even the best roads in repair without considerable expense, and I do not think he has put forth that phase of the question quite as plainly as might be.

The meeting then adjourned till 7.30 p.m.

FIRST DAY—EVENING SESSION.

Promptly at eight o'clock the President took the chair, and said: The Executive Committee was good enough to ask me to make an address this evening on certain phases of the road question, but I have decided not to do so for two reasons. First, because I am more anxious to hear a discussion coming from yourselves, and secondly, because we have some excellent papers to come before us at this session. I believe that there is nothing so interesting and profitable at a gathering of this sort than a good, live discussion. I shall now call upon Mr. Davis for his paper.

ROAD CONSTRUCTION AND MAINTENANCE.

By W. M. Davis, C. E., Woodstock, Ont.

In this short paper I shall refer more particularly to the class of roads best suited to the conditions which exist in the county of Oxford, and which will be applicable to many localities similarly situated. The character of the land throughout the greater portion of the county is undulating and is now in a state of cultivation. In no part of the county is it difficult to find an outlet for subsoil and surface drainage within a reasonable distance. A few of the leading roads were constructed in a substantial manner in the early forties by private companies, and the remainder of highways have been graded and maintained by statute labor according to the system, or rather lack of system, prevalent over the whole province. Material, such as field stone and gravel, for the construction of permanent roadways can be had in many cases on the neighboring farms for a little more than the cost of hauling. The field stone have been gathered into heaps and disposed of in any way to get rid of them, and were absolutely worthless in the absence of rock-crushing machinery. All that is required to give us a network of excellent roads in the county is a knowledge of how to use the materials nature has placed at our disposal, and a system under which the work may be done in a thorough manner, and when once done may be maintained in an efficient state.

The science of road construction is neither difficult nor obstruse, but is based on well established principles, a clear comprehension of which is necessary to attain satisfactory results. It is not by any means a modern science, though in its infancy in this country. It is our good fortune to have the benefit of the years of experience of other countries.

Drainage.

Some one has truly said the three prime essentials to good roads are, first, drainage; second, better drainage; third, the best drainage possible. On soils of a pervious nature, open ditches of from three to three and a-half feet in depth will be found sufficient if the fall is good. This point is imperative—no water must remain stagnant to soak into the roadbed. In more retentive soils a very good plan is to lay three-inch or four-inch tile in the centre, parallel with the line of the road, and emptying into open drains or the natural watercourses. Another method is to lay transverse drains, preferably in the form of a V, with the apex up hill and the legs connecting with the open ditches. The best arrangement, where the importance of the road will justify the expense, is to dispense with the deep open ditches. Lay two lines of tile on each side the road to carry off the subsoil water, while the surface water would be provided for by shallow gutters which would discharge either into the natural watercourses or the subsoil drains.

Width of Roadway.

A good width for the roadway is thirty feet between ditches. This will give room for three driveways, and will be found cheaper to maintain than a narrower one, besides making a safer road in winter.

Earth Roads.

To this class the great majority of our roads must always belong; and for limited traffic they are the best of roads when kept dry below the frost line. They can be cheaply maintained by unskilled labor—a common road scraper and roller being used for reforming the roadbed, the labor and teams being procured from the neighboring farmers. The road machines with which many municipalities are now supplied are specially fitted for this class of work, and are valuable assistants in the hands of an intelligent operator; but if they are used to heap the grasses and sods from the side of the road into the centre, a method of which I saw an example last summer, one machine, if industriously worked, will cause more damage in a day than the road will recover from

in a year. In the maintenance of earth roads all that is necessary is to keep the drains open so that the subsoil will be dry and the surface free from ruts, with the centre crowning to get rid of the surface water quickly.

On trunk roads, where the travel is great, some more durable material must be used, but it will generally be sufficient to prepare a roadway eight feet wide in the centre, leaving an earth road on each side for summer travel. Gravel in the past has been universally used—on account of the cost of breaking, field stone has apparently never been considered as a material for road-making. The cost of stone crushers now place them within reach, and an excellent road can be made by using these stone for a foundation, completing the road with broken stone and gravel. This roadway has no new feature, and is simply the old Telford road, the cost of which formerly placed it beyond our reach, but which I shall endeavor to show is, under the conditions I have described, the most economical road that can be built.

The subgrade should be formed at a depth of twelve inches below the intended surface of the road, and should have the same crown as that proposed for the surface, about two inches in eight feet. The roadbed should then be thoroughly rolled. Any depressions that appear should be carefully filled. A layer of common field stone should then be laid in courses at right angles to the roadway. The longest diameter vertical, larger ends down and contiguous courses breaking joints. This layer should not be less than five nor more than seven inches thick. The stones should be well pounded with a heavy pounder, the interstices filled with chips firmly wedged by hand. On a foundation thus prepared, place a layer of clean broken stone, four inches thick, of which the largest piece shall pass through a two and a half-inch ring in all dimensions. This course should be thoroughly rolled. Cover the broken stone with a coat of clean, coarse sand, which should be swept or washed into the interstices of broken stone. Finish the roadway by covering it with two inches of fine gravel, of which the largest stones should not exceed one inch in diameter, which should then be rolled until the surface is perfect. In rolling commence at the sides and continue until the roadway is so consolidated that subsequent rolling in the centre will not crowd the material out Use the roller without load first and gradually increase the weight until the maximum is reached.

The following estimate shows the cost of a mile of road constructed as above described :

Grading—1,564 cubic yards at 25 cts	$391
Cobble stone—782 cubic yards at 50 cts	391
Laying cobble foundation	235
521 cubic yards crushed stone	442
Spreading stone and gravel	100
260 cubic yards gravel	130
Rolling	97
	$1,786

The great bulk of this work would be done by the people of the neighborhood, and the district through which the road passes would in this way be benefited by the distribution of the money expended on the work.

I am aware that the estimate I have given is far below those usually found in books on road construction, but you will perceive the chief difference is in the cost of material, which can be had, as I have stated, practically for the cost of delivering it on the roadway, and the estimated cost of all the work, except the rock crushing, is based on the actual cost of similar work actually carried on under my direction.

Maintenance.

The question of maintenance is second in importance only to that of construction. No matter how skilfully and thoroughly the work of construction is carried out, no road can be expected to retain its efficiency without constant attention, and it will be found

much more economical to keep it in repair than to put it in repair after it has begun to seriously deteriorate. The old saw of "a stitch in time" is especially true in road maintenance. A small rut appears, a shower fills it with water, which soaks into the surface of the road. Each passing wheel makes the rut deeper until it becomes a mud puddle, which requires a load of road metal to repair. Each rut or depression should be taken when it appears, the dust or mud raked out and filled to the surface of the road with metal. The metal should be used sparingly, not piled up higher than the surface of the road, to cause an obstruction. Where several ruts occur in a short distance only the deepest should be filled first. When the material in these is packed, fill the others. The places repaired in this manner should be rolled until quite firm. The best time to make repairs is in wet weather. Then every depression and spot that needs attention shows plainly, and the new material readily unites with the old. The drainage must not be forgotten, for the indispensable condition for a stone road of any sort is an unyielding foundation, and this is impossible without thorough drainage. I cannot emphasize too strongly the necessity for the repairs being continuous. They can be made more cheaply when promptly done, and what is of more importance, the road is always good, while under the plan of annual repairs the road is nearly impassable for one half of the year for want of repairs, and impassable the other half because of the repairs.

It is of importance that the roads should not be too closely shaded. Shade trees should be trimmed high, and where timber-land adjoins the road the trees should be cut for two rods on each side of the road allowance. The road must be exposed to the sun and winds in order to dry quickly after rains.

Broad Tires.

The width of tires has an appreciable effect on the cost of maintenance of roads. The narrow two and a half-inch tires in general use, when heavily loaded, cut into the roadway like a knife, and it has been proven by experiment that wheels with two and a half-inch tires cause double the wear of wheels with four or four and a half-inch tires. Morin's Experiments indicate, "on a paved or well built macadam road the tractive force is independent of the width of the tire, provided the same is more than three or four inches On compressible roads, such as new gravel, or on a meadow, the tractive force diminishes with an increase in the width of the tires." The chief advantage, therefore, of narrow tires is on muddy roads where the thick mud has not so tenacious a hold when it wraps round the spokes and felloes. To counterbalance this we have easy draft on the farm and a great decrease in injury to our roads. The only rational reason for the existence of the narrow tires is custom, and I am afraid the use of broad tires will never become general until the width is regulated by law.

Road Machinery.

A very essential implement in the construction and maintenance of earth roads is the reversible road machine. It is no exaggeration to say that the work, grading and shaping a roadbed, can be done by one of these machines for 50 per cent. of the cost under the old methods, and the qualitiy of the work is infinitely superior.

A serviceable rock crusher with a receiving capacity of fifteen inches by seven inches, and having a product of six cubic yards per hour, would cost, mounted on trucks, $1,000, and could be run by an ordinary portable engine of nine or ten horse power for about $20 per day, including the cost of labor.

I am sensible of the advantages of a steam roller, and am willing to admit that for city streets it is indispensable, but when its disadvantages, such as breaking of culverts, scaring of horses and general interference with traffic are considered, I am of opinion that a horse roller is better adapted for use on country roads. A roller weighing about 3,600 pounds, three feet in length, four feet in diameter, made in three sections with a frame strong enough to permit of its being loaded with one and one-half tons of pig iron, would, I think, answer every purpose, and the cost need not exceed $150.

STATUTE LABOR.

It would be difficult to devise a system of road maintenance that would have fewer objections and be more acceptable to those who bear the burden of the cost than statute labor if the system were operated in the most effective manner. The agitation for a change has arisen on account of unsatisfactory results which were not a necessary outcome of the system, but rather to knowledge of road construction and maintenance, or to a feeling of irresponsibility on the part of the pathmaster on account of there being no methodical supervision of his work. A great portion of the work, particularly on the earth roads, can be done by the neighboring farmers, who own their own teams, more economically than in any other way. There is, however, room for improvement in the working of the system. Pathmasters should be selected on account of their knowledge of the work and should be continued in office as long as efficient. They should be held responsible not only that the whole of the road work is performed, but that the "beat" is kept in a satisfactory condition. Each pathmaster should have the power of distributing the work over the year in the manner he considers best, and should be paid for the time he is employed. There should be a township official whose duties would include a supervision of all the roads in the township, and to whom each pathmaster should make an annual report, giving a detailed account of his operations during the year. This would give an opportunity for the comparing of the results with the expenditure on the different beats, and would excite a rivalry between the pathmasters, and each would naturally strive to increase his knowledge of the work, and endeavor to so employ the means at his disposal as to give the best possible return for the money and labor expended.

I think the solution of the problem of road maintenance will be found in some such method as that outlined rather than in any radical change from the statute labor system.

The PRESIDENT: I think you will agree with me when I say that we have just listened to a model paper. It is brief, pointed and thoroughly practical.

Mr. HENDERSON (Beverly): I wish to say a few words in reference to the proposed change in the matter of statute labor. I was much struck with what Hon. Mr. Dryden said this afternoon—that statute labor had been greatly misdirected, but that he did not expect much change would be made in the system. I am reeve of Beverly township, and we are constantly discussing the matter, and I must say that the possibility of making a change does not appear to take with our people. The majority say that they would rather put their taxes into statute labor than pay the money. I can assure you that this is a very strong argument with them. The trouble with our administration of statute labor is, that while some divisions will have their work done in a thorough and honest style, in other divisions the men will sit on a log and talk politics—and sometimes things will get a little warm. I am free to confess that as now controlled one-half of the work is lost. The only way I can see of getting over the difficulty would be to have an arrangement something like this: Group together a certain number of divisions and put an overseer or supervisor over the group. Let him have the power to hire teams if necessary, and give a month or so of his time to superintending the enlarged division. If anyone shirked work he should have the power of dismissing him. The council could state to the supervisor how much money might be spent upon each division. When the task was completed he should certify to the council the various amounts expended, and it would be the duty of the council to pay the different parties he might hire. Some of this money might come from those who wished to pay instead of doing their statute labor. However, we need to move slowly and give careful discussion to the whole question. What makes me incline to having an overseer is that down in our section of the province they are building the Toronto, Hamilton and Buffalo railway, and I know that if the statute labor was directed in the same way as railway labor we would get double the work. (Applause.) We must impart into our road system something of their energy and method. Some men come to the council begging for assistance, and these are generally the ones who put in the least work upon their road allowance. This means that

the men who do their work well have to pay for the miserable work done by these other fellows. I sometimes think that a fairer plan would be to strike a certain rate of assessment. The statute labor is struck on a sliding scale. Make a uniform rate and let it include road work.

A MEMBER: Would not that be doing away with statute labor?

Mr. HENDERSON: Yes.

Mr. JUDD: Who do you suggest should see to the repairing of the roads after the statute labor is done? Should it not be the man who has been overseeing the work? I believe the council should have him at it all the time.

Mr. HOLDEN (Essex): I think the best way to get the people to do their statute labor properly is to get them interested in the roads. I believe that kind of an argument will be the lever that will work up the proper feeling throughout the country. The statute labor upon the roads in our section was formerly performed in a most miserable way. A number of people got out of their work altogether. But that is all changed, and I believe we now have one of the best roads in the county of Essex. It is only a few miles long, and I do not think the road could be made better for that particular locality. It has all depended upon the pathmaster. About thirty years ago Windsor was seeking to secure a road through the township of Colchester, and the Windsor merchants came along with a subscription list, asking the farmers along the road to subscribe towards the new highway. I gave $60, and some farmers gave as high as $100. They did not grade the road high enough, but we built a special drain, and so improved the highway, not by raising the road, but by lowering the ditches along it. The road now is better after a summer's rain than at any other time.

Mr. JUDD: How long is your pathmaster employed in the year?

Mr. HOLDEN: One of my brothers has been a pathmaster so long that I cannot tell you the length of time.

Mr. S. HUNTER: I have had a little experience in my time in the statute labor business. I was for eleven years pathmaster on a road division which needed a good deal of work. I remained in office until I got into difficulty with some of my neighbors in trying to get honest work done. That is generally the way when a man tries to do his duty as pathmaster. Some men expect to go out and have a good time instead of putting faithful work upon the road. If you have a good pathmaster and he gets proper support, you can use the present system to advantage. Once you get a good bit of road built the travelling public will give you some credit, and then the laziest man on the beat will take an interest in the work. I have come to the conclusion that we cannot get as much work done in any other way as by the old method, if we could get the pathmaster right. But it is a "thank you" business; for it means no pay, very little honor, and often a lot of abuse, and that nobody likes. The pathmaster who takes an intelligent interest in the road should be encouraged. I am afraid that if you begin to pay the pathmaster there will be a little jealousy. You can have the office for twenty years if you will take it for nothing, but as soon as you are to get a little pay for it you will hear the whisper, "This man need not get all the pay, for some of us are just as much entitled to it as he is." I cannot agree with the writer of the paper that the road inspector should be given all the work. There is very little time for work between seed time and harvest. If we as farmers have to do this work it must be done pretty much in our own time, and some of it should be left until after harvest.

Mr. HOLDEN: It must be done before the 15th of August.

Mr. HUNTER: Too often we have poor road divisions, a poor lot of men, and poor land at a low valuation. They are poor managers, and their surroundings are poor. How are you going to get these men interested? Why, you will have to change some of them, and make them over again. (Laughter.) When we come to a road division that has plenty of gravel in it, and has rolling land with natural drainage, the roads are good, for nature has helped us. But we have acres and acres of low land, and when the average man starts to dig a ditch there he does not know what way the water should run. We

allow 75 cents a day for statute labor. But are we sure that men hired by the day to do our road work will be any more honest or industrious than the farmers who do statute labor? We shall have to pay some one to look over the work and see that it is properly done—not to look after the men individually so much as to look after the pathmasters. Just so soon as you can get a man to believe that working on the road is adding to the value of his property, just so soon will he take a proper interest in it.

Mr. SHEPPARD: It is very pleasant to hear some of the gentlemen who have spoken, state how well statute labor is or may be done. But I notice that they always put in an "if" there. If the statute labor is not faithfully done it is because the pathmaster does not do his duty. I noticed what Mr. Henderson said about appointing overseers or supervisors, and in this connection I would suggest that the proposed plan should be tried in some municipalities, and not at once attempt to abolish statute labor, for if we attempt to do away with it there will be much strong opposition. But if we can get several strong divisions joined together, and appoint men over these divisions to see that the work is done well, we will make a decided gain. The reason so many stick to the present method of statute labor is because they hope to get something out of it. Some also oppose the change in the hope that by some hook or crook they may get out of the work altogether. In the majority of cases the pathmaster is appointed year after year. He is likely to be abused if he does his duty strictly, and therefore he is too often inclined to close his eyes to the idleness of some workers in order to escape their abuse. I would like to hear further discussion along the line of introducing some such system as I have been referring to.

The PRESIDENT: I understand that some resolutions will be brought in relating to this matter, and therefore we shall reserve further discussion of this point until the subject comes up before us in that form.

Mr. J. C. Judd then presented his paper on "The Statute Labor Law."

THE STATUTE LABOR LAW.

By J. C. JUDD, MORTON, ONT.

In this progressive age, with the discoveries, theories and experiences of the past, pouring themselves into the present, when science has apparently given to man the keys of her power, and the inventive genius of labor-saving machines, is fast alleviating the drudgery of human toil; when governments are convening to adjust and regulate the laws which govern the complex machinery of civil society, it may be distinctively fitting in our association and movement to call the attention of our Legislature to a defect long felt in the management of our highways, in the hope that legislative progression which has characterised the past may right soon receive careful consideration in the modification of laws so long neglected.

In presenting to you the municipal laws of our highways which require the transformation touch of the legislative artist, it may be well for us to understand and unfold those of the past. This I shall not undertake, neither do I think of attempting to grasp at all of the present.

I shall seize upon a single characteristic, if not the profoundest, perhaps the most prominent, and certainly that which is the aim and object of this Association to intelligently improve.

The laws of the highways are the subject of volumes and indeed are quite as complicated as the authorities and statutes upon which they are founded, their constructions and repairs, nuisances and regulations, maintenance and management, liability and procedure, would require much more research than I have had occasion to give or would be pleasing to you to propound.

What we want to consider is simply the present system of the management of our common highways.

In this, too, I shall confine my remarks to those of the country.

The present system of statute labor has its origin in the feudal laws of England when the lord of the manor required service to be rendered. Then, as civilization began to dawn, serfdom faded and freedom inspired human thought. So came the feeling and responsibilities with reform in the way of self-help in the settlement of this country.

The question of clearing our forests and making roads for the settlers was one of invited labor, and gradually as our ancestors improved in financial matters a system began to be adopted.

By the Consolidated Municipal Act provision is made for the construction and maintance of highways.

1st. By general assessment on ratable property.
2nd. By raising money by debentures.
3rd. By frontage tax.
4th. By statute labor.

Each and all of which provisions are used without uniformity and subject to the liberality of the individual municipality—the latter of which is by common consent totally inadequate.

It is unnecessary to recall to you, *seriatum*, the clauses of this statute, all of which you are no doubt conversant with.

By section 88 of The Assessment Act the tax on individuals, in cities and towns, on statute labor is paid without friction and by reason thereof may be attributed a cause why the roads are better maintained than in the country.

By section 91 the tax on individuals is presumed to be paid by labor, which, no doubt, equally accounts for wretched condition of the country roads.

Section 98 provides for the enforcement of tax in lieu of statute labor, either by distress or imprisonment.

Sections 100 and 101 provide for a charge upon the land of non-resident or commutation entered upon collectors' roll in case of resident, where there is non performance of statute labor, both of which are to be collected by collector. Provision for statute labor in unincorporated townships is given like those of incorporated, only that the meeting called as provided for, becomes a self-constituted counsel with commissioners and overseers; and with such self-interest manifested by necessity, the machinery is often more workable than that in incorporated townships where the system is looked upon as an annual legal requirement.

Sections 92 to 94, both inclusive, give township councils power to commute statute labor at such sum as they shall see fit.

Sections 532 to 535, inclusive, define the jurisdiction of our county roads and bridges, such as those assumed by county councils or situate on boundary lines, and provide also for municipalities to make a claim for certain contribution for construction of bridges.

Sections 538 and 539 make provision for roads under joint jurisdiction and for the concurrence of a by-law in each adjoining council.

Section 545 provides for the width of the road or street, which is a very important section, and is probably more infringed upon than any other section in the statute. This infringement is getting to be a great evil in many localities, and although ample provision is afforded to protect the roadway, I know of no active measures being taken for that purpose.

Section 546 provides for the widening, selling or diverting road allowances, and for establishing or opening up other roads over individual property and the procedure for that purpose, the effect of which is that a non-resident is liable to have a road run across his farm upon a hurried application to the council, if the council so chooses, without notice to the owner. This clause is not only defective but admits of stealing a roadway without the knowledge of the owner. Provision should be made at once compelling the council to serve notice on the owner whenever any such application is made.

Under section 479 the township council is empowered to appoint, among other officers as are necessary for the carrying into effect the provisions of the Act or by-laws of the corporations, overseers of highways, road surveyors and road commissioners, and hence by this authority is constituted the office of the pathmaster or overseer ; and without entering into all the characteristics which are defective I submit this appointment practically is entirely inadequate for the purpose of road reform even under the present statute labor system. As a logical question I leave it for the consideration of others.

Section 531 provides that every public road, street, bridge or highway shall be kept in repair by the corporation, and in default thereof the corporation shall be responsible in damages sustained by any person by reason of such default. Non-repairs has been defined in courts of law, "to be any defect in a highway which renders it unsafe for ordinary travel." This has been the subject of much litigation ; indeed, the reported cases are legion where damages have been recovered against corporations for defective highways.

My own opinion is that there are few townships or counties whose roads are in such condition as to preclude the possibility of damages. Further, I am of the opinion that every township which neglects not only to keep their roads in proper repair, but allows the fences to be removed within the limits of the roadway prescribed by law, are liable for damages.

In conclusion allow me to observe that however much we may think of our municipal institutions it is an apparent fact that the law of statute labor is impracticable ; that the permissive system given by the Act to municipalities in the expenditure on highways will never adapt itself to sound principles of economy without readjustment by legislative enactment. It is a system which will never develop our rural districts to that state of civilization so much desired. It is a system which only in isolated cases will ever be abolished by the municipalities themselves and as their own Act.

Stringent laws are made to protect society, and the executive enforce those laws.

Municipal corporations are quite as negligent in the observance of the laws as are other states of society. Personal and political motives prompt them to be passive, while individual interest, narrowness of thought and greed robs the community of that which nurtures them and would be an acquisition to their wealth.

As a result of my visit to the different municipalities in section 8 lying between Bowmanville and Napanee made last month, at farmers' institute meetings I learned that the statute labor system *per se* was insufficient for the purpose of maintaining the roads ; that in many localities, especially where good roads existed, they were in consequence of a large expenditure of county or municipal taxation.

I submit these few thoughts to your consideration in the hope that your effort will be the means of awakening new interest and in developing a great reform in the maintenance of our common roads.

Mr. JUDD, added : In Eastern Ontario they are actually stealing the sides of the roads. Many of the roads there are not over 35 feet wide. The statutory width is 66 feet. The council has power to make a by-law to permit the roads to be built less than 66 feet in width, but I am one of those who believe that 66 feet is little enough for a roadway. It gives us an opportunity to plant trees and beautify the country. Opposition to these encroachments upon the highways should be vigorous.

Mr. MCEWING : The wise men of the east do not care for the straight and narrow path. (Laughter.)

Mr. WOOLEY : Has a council power to decrease the width of a road already laid out —concession or side road ?

Mr. JUDD : They can pass a by-law to lessen the 66 feet.

Mr. WOOLEY : They did that in our township and had to change it back again.

Mr. JUDD : Provision is also made for opening up a roadway across a man's farm if it is at the end of a public highway. They simply send him notice to that effect, and also have it printed in the local paper ; but if you do not reside on the property or take the local paper you may never know anything about it unless there is some one in the council who is friendly enough to inform you. Regarding pathmasters, I would like to

say that when I started out in my pilgrimage with the farmers' institute I went for the pathmasters right from the shoulder every time, and I got through alive. You cannot get effective work done under the present system of pathmasters. In every township there should be a proper road overseer or supervisor. He should have proper machinery for making roads. This may cost in the neighborhood of $500, but it will pay. He should be paid an annual salary, and be kept on during good behavior. He should be subject to no one but the council. He would then see that the work was properly done. Not every man can go on a road and intelligently work at it. Some men say that a scraper will not pay; but if you get the right man to manage it it is worth 100 men's work, and it can do its work quickly. Some townships have small villages attached to them, and many of the population therefore are not farmers. Some of these can be called on to assist. With a few men and good machinery the supervisor could get a good deal of work ready for the farmers, who could then do the gravelling, etc., by way of statute labor. A little extra expenditure in this way would enable us to get on much better. In the township of South Crosby, in the county of Leeds, I took the trouble of calling a meeting of our voters to see the working of a road machine. About 150 of them came out, and took in the exhibition. I asked for a vote upon the question there and then, inviting all in favor of the machine to go to one side of the road, and all against its purchase to go on the opposite side. Very few went on the latter side, and one of these said he was in favor of the machine but did not care to take the trouble to cross the road. However, the council would not buy the machine. One man—a sort of fossil, worth $60,000—was strong against it, but he is opposed to spending a cent for anything he can possibly avoid. He said, "$220 is too much for a machine, let us wait for a few years and we may be able to get one for $200." The township councils need to be stirred up by the intelligent electors.

Mr. HOLDEN: You spoke about councils being liable for damages We have a road with a four foot ditch.

Mr. JUDD: It all depends upon how the ditch is made, and that is a question for a jury to decide. If the road is properly graded, and you have a good, well-built ditch, I do not think you need fear much in the way of law suits. Good judgment must be used in planning and building the ditch.

Mr. WOOLEY: In stating what he did Mr. Judd's pulse beat with mine. The great trouble to-day is that the man who would "hold the fort" and remain in the council must be more or less a man of policy. It is a bad state of affairs. I have been in councils when petitions, *pro* and *con*, came before them, and while I knew that the *con.* deserved support I felt also that it was "Good-bye, John," if I did not vote the other way. I believe in having a supervisor. It takes the onus largely off the council, and puts it largely in the hands of one man, responsible, of course, to the council, but relieving the municipality to a great extent of the burden. If a man were appointed to that position, and would not do anything else, the cost to the ratepayers would be a mere drop in the bucket. It would mean that the road can be attended to any time. The pathmaster would be subject to that man and could be consulted with at any time. The supervisor could get assistance at any time, and at times when the road might most need immediate repair. He would soon get to know as much about the needs of any particular section as the pathmaster. He could say to the pathmaster, "You have so many days' work here to do. Put so much here, and so much there, and so much farther on" In that way the road work can be done to better advantage and the pathmaster be relieved of much of his disagreeable work or responsibility. We have in our township places where there is nothing for miles to make a road out of. It is a well-known fact that most municipalities are afraid to buy a road machine. Some years ago I induced our council to buy one and put it on a road that had been macadamized. It did as much work in ten hours as forty men could do with teams, plows and scrapers.

Mr. C. M. SIMMONS: I have been wondering where our friend lived, and on what kind of a rural section. While there are some very smart men in the east, I do not think there is the same general equality of fair ability that there is in the west. We believe in our township that the council we elect are just as competent to deal with the

roads as any supervisor they may appoint. We make it a first qualification of our councillors that they should know how to manage the township roads. Of course this log-rolling business may come in; but how easy it would be to have a supervisor elected who could supervise the election to a considerable extent also. (Laughter). I believe the pathmaster is just as capable as a supervisor. I have not so low an opinion of the pathmasters of the western part of Ontario as has been expressed here to-night. In county after county and township after township, you will find a high standard among these men. You can easily appoint a good pathmaster. All that is wanted is to have one good man in each road division, and there would be but little fear of not having the statute labor properly performed. Where has there ever been one road division where the residents have given up all work so as to commute their statute labor? I once took a show of hands to see who were kicking. I found it was chiefly those who wanted an old mare or a colt to run on the road. We have said "Go and request the ratepayers of your own division to ask that your statute labor be commuted and we will do it." But we have not yet got them to do it.

Mr. FITCH: I would like to see one township do without statute labor one year. I believe we could get double the amount of work for the same expenditure. I do not think there is one councillor in our township who would not take one corner of the township and see how it could be done. I know we can get more done for a dollar than we can for two day's work by the old plan of statute labor. We draw gravel on the road with our wagons and spread it, but if we had some one who could oversee that road and spread the gravel at the right time it would be better. Under the system proposed there would be men in the township willing and ready to do the work at the best time. There are always poor men in every township who are ready to do such work.

Mr. JEFFS: I would like to ask the speaker who said they dug a four foot ditch, where did they throw the dirt?

Mr. HOLDEN: It was done twice, and was spread in the fields adjoining.

The PRESIDENT: One of our friends has spoken of the perfection of the pathmasters. Now, perfect pathmasters should mean perfect roads; and if the roads are perfect we are not needed here. But if the roads are not perfect, we are here to discuss their possible improvement. I am one of those who believe that our system of statute labor can be improved in many ways. We have far too many pathmasters. We should enlarge the beats, and no man should be appointed as pathmaster unless he has special ability for the position. I believe we should have overseers. If the reeve of the municipality were appointed overseer, and paid $50 or more a year extra, he would see that the work was well done. If there was one man who would be responsible for the proper doing of the work no one could then say it was "the wicked partner."

Mr. C. M. SIMMONS: I admit that there can be great improvements made, but I would like to say that to drain the roads in the manner suggested would cost too much in these stringent times. We have adopted the plan of paying man and team one dollar a day. But if you spend $1,000 in one section of the township other sections will soon want it.

The PRESIDENT: Now we see that Mr. Simmons is a genuine road reformer. If we are right do not ask what people may think, but try and lift them up to our higher level.

Mr. A. H. PETTIT: If we take the trade returns and look at the quantity and value of cheese, fruit and other products of the farm, we will get a good idea of the intelligence and progressiveness of the people of this country. I have never been a pathmaster or a member of a municipal council, but we look to the members of this association to formulate some scheme. We are ready for a practical good roads plan, but we want it to emanate from this body. But when you get it ready do not send it to the municipal councils—send it straight to the people. If you will get the people before you and in your favor you will soon find the councillors in the gallery. Give the scheme straight to the ratepayers and let them decide upon it, and they will speak with no uncertain sound.

The PRESIDENT: The work of the Association for the next few years will be to keep this matter of road improvement before the ratepayers. I have now pleasure in introducing to you a former member of the Legislature and one of our pioneer road reformers.

GOOD ROADS.

By A. F. Wood, Madoc, Ont.

The roads of a country are the arteries along which pass the supplies of trade and commerce and on which the active life of the communities depend—and there is no more certain test of the progress of any country and its advancement in civilized life than a careful enquiry into what extent these essential means of communication exist. From the primitive wagon or sleigh road by which the settler in the "bush" or the dweller on the prairie opens up communication with his neighbor or finds his way to a place of market or supply—to the magnificent railway on which the train dashes across the country the same test will apply. Take a glance at the countries on this continent. Compare North America with South America and note how the means of communication and facilities of travel follow advanced civilization. Compare China with Japan. China has no railroads. The canals are of the most commonplace kind and the inter-means of communication are of the most primitive class, while Japan during the last thirty years, having advanced rapidly in the civilization of the east, has railroads and canals of the latest and most improved class; and the means of communication by roads and highways are not far behind America.

It may seem, on first thought, a far-fetched argument to apply general principles affecting nations to the ordinary and commonplace matter-of-fact question of common roads that run up and down on concession lines and lead into county arteries of travel that take us to the villages, towns and railway depots of the country. But a second thought with proper consideration will show how applicable the illustration proves to be. What would be the use of our great arterial lines of railway for the purpose of carrying off the surplus produce of the country if the lesser arteries from the farm or factory did not reach them, conveying by wagon-loads the output of farm and factory? An enterprising citizen goes to the great Northwest and locates a homestead. He is pleased with his location and his opportunities, and he writes to his friends and points out an equal chance for them. What are among the important questions asked? After being satisfied the soil is productive, "How far are you from a railway depot?" For after all, to the enterprising farmer or producer it is a serious question, and if he thinks it out to its legitimate conclusion he will see it is a matter of very grave importance. The enterprising producer—and he is one of the important elements that build up a country—intends to do more than merely supply a living to his family. He intends in a greater or lesser way to be an exporter—and though this term is often limited to the capitalist who sends away products in very large quantities to foreign countries, yet its true application is to every man who sends away any product. The Imperial Dictionary says: "Export means 'to send or furnish for conveyance to distant places,'" and "an exporter is one who exports," and as the larger exporter counts the cost of long distances by ships, canal or railway and makes his profits very often on "low rates" so the smaller exporter counts the cost of conveyance to points where he delivers his goods and looks upon short distances and good roads as a very important consideration—for the cost of haulage comes off the producer who exports even to a railway depot. And if one man can say, "I take 60 bushels of wheat at every trip to the depot because the roads are good," and another is obliged to say, "I can only take 30 bushels because the road is bad," then supposing each to have 1,000 bushels to export and two loads can be delivered per day and each day's work is worth $2.50, then "good roads" have given to the one exporter $40 more profit than the poor roads did to the other. Or taking the following proposition: Start in the Northwest with twenty millions of wheat for exportation. Say you save by "good roads" to the first exporters $40 on each 1,000 bushels, by "good rates" on railway ½ cent on each bushel to the ocean to the second exporters, and by "good rates" on ships ½ cent per bushel to the third exporters—(all the savings being small sums per bushel)—and supposing all these rates of saving come back to the producers—and that is where they are sure to come—and you haves aved to the country producers

(and thereby so much increased values) to the extent of one million of dollars, four-fifths of this sum ($800,000) being saved by the estimate as made on "good roads" at the commencement. Now, if this estimate be true or approximately true—and in some parts of the country I believe it far too low—then I have demonstrated that the material prosperity of a country is greatly facilitated by "good roads," and the more intelligent a people are the nearer will the roads approach what is required.

But to proceed to discuss the more pertinent question of building and maintaining "good roads," as applied to the ordinary purposes demanded by the country—and I suppose this paper was expected specially to deal with that question. I say, "I suppose," because in a communication I received from the Secretary he intimates that it is desirable I should take part in the objects of the meeting from my large experience in the building and maintaining roads in the county of Hastings. And allow me to say by way of preface—so as to give due weight to what I may say by way of experience—that I was a member of the county council of Hastings for about twenty years, of which I was ten years warden, and for four or five years during the latter years chairman of what is styled "The Gravel Road Committee." My connection with the council commenced in 1857.

The best way, it is said, to impress truth and facts on children is by object lessons. Experience has taught me that in this respect at least "Men are but children of an older growth" Our judgment and knowledge of things are very largely comparative. If I asked, "What is perfection?" the answer depends on what are the ideals of the person of whom the question is asked. Suppose I asked this audience "What is the best system of government?" I should have a variety of answers with many qualifying conditions, but most of us could agree with the comparative conditions of John Burns, the labor M. P. of England, when asked, after a visit to the United States, where he had gone to look into their system of government, and where strikes and labor questions had come prominently before him, what he thought of republican institutions, answered: "I think Albert Edward (Limited) safer and better than Carnegie, Pullman & Co."

So I think the best way I can serve the objects of the "Good Roads Association" will be to hold up an "object lesson" taken from the county of Hastings and allow you to judge comparatively of its merits according to your individual ideals.

The county of Hastings was the first county in Ontario to try and get away from the old mud roads by a system of better roads to take their place. When they commenced the settled area of the county was about 1,300 square miles. (It has since increased to over 3,000 square miles.) The south boundary was the Bay of Quinte, the width 36 miles, the depth 40 miles. The county town (Belleville) was situated on the Bay of Quinte. At this place all the public business of the county was done. The courts held their sittings there. The county council met there. The only or principal market for farmers was there. All the professional men of any standing resided there. The papers were printed there. All meetings, political or scientific, affecting county interests were held there. In a word, the business of the county was transacted there

The leading roads started at Belleville and ran to the different points of business interest in the county. One west and another east and four others radiated from the same starting point and ran northeasterly, northerly, northwesterly and north by westerly to the limits of the area referred to, making a total of leading or county roads of about 150 miles. Take my hand (holding it up), add a finger to correspond with the thumb, call the palm the county town, and you have a pretty good idea of the leading or county roads at that time. Into these roads the concession roads and side roads led. Then add to this, in your mind, the Moria river starting at Belleville and winding its way up northerly through the central section of the county; the Trent river on the west running up the west side, and the Salmon river on the east up the east side. Then supplement with the real fact that no worse locations could be found in Ontario than was occupied by these county roads in their entirety. All the difficulties possible existed. Clay bottoms, marshes, rock and sand hills, gullies, rivers to cross and lakes to bridge over. In fact, as I said before, we had "all the difficulties," and yet the county of Hastings has to-day without doubt the longest lines of the best gravelled and best maintained roads in Canada, and all free from toll. Now, Mr. Chairman, I am not boasting of this accomplishment for the mere purpose of boasting, but for the higher purpose of answering the natural

question of how this change was brought about, so that you may profit by our mistakes and good judgment. I said "Profit by our mistakes," and we made many. It is a sad commentary on our imperfect humanity that we can learn more from our blunders than in any other way, and he is a wise man, or becomes wiser, who recognizes this truth.

As I have said, these were mud roads and bad at that, and yet for years and years, before the sixties, all the produce of the county of all kinds was hauled over these roads on wheels to the county town. In the fifties the growing demands of transit forced upon the leading men the necessity for immediate action. It commenced in two or three companies being authorized by the council to build short lines of plank roads and collect tolls. A few years demonstrated the fallacy of this kind of roads, and gravel took their place. Comparatively speaking the tolls were high, and the investment being profitable the companies got power to extend until they reached a total of about 50 miles. Beyond this it did not pay the companies to go and get large profits, but they had control of all the sections immediately adjoining the county town. Extension was imperatively demanded in the general interest. A by-law was passed submitting to the people the question of loaning money for that purpose and defeated by a large majority, many of the sections most interested giving the largest majorities against it. Such is the perversity of human nature! A second by-law was submitted, a fuller discussion took place, more light was thrown into the practical benefits and the by-law passed, but with the condition of toll gates attached. Many of us believed then as much as now that toll gates were a mistake, but we could get the extension in no other way, and we drew long breaths of relief as the gravel roads stretched out towards the extremities of the county. Then came a struggle to do away with toll gates. This might be done with county roads, but how about the companies? The companies were sounded as to how they would sell. Some were fair enough, but others were extortionate in their demands. Another by-law was submitted and carried to borrow money to buy out these roads, extend the county roads and do away with the toll gates. After much trouble the companies were bought off, but we paid well for it. We had made the mistake of incorporating the companies, and we paid the penalty. By this, however, the county became the owner of all the county roads. The "toll gates" were abolished, and our roads became like the air and light—free to all.

Then followed the question of maintaining them. Many different plans were suggested and introduced into county council. One particularly was urged, of handing them over to the several townships through which they passed, but fortunately never entertained. We tried several modes, one was giving contracts for gravel and broken stone at so much per cubic yard, spreading included. It failed because of the cost of inspection, which was required, not only as to quality of material and how spread, but as to quantities and where spread, for the cost was regulated by the distance the material was hauled. And besides this, the county had to keep open the ditches and regulate culverts. Whatever can be done by towns or cities or by contractors, one thing is certain, it was a decided failure in a county with over 200 miles gravel road. Then the contract system per mile was tried, specifications drawn up and revised by the county solicitor with greatest care, so much for gravel or broken stone and so much per mile to keep ditches and culverts open or rebuild when necessary. This was tried in two ways—in long lines and short lines of road. After a fair test this failed—too expensive. Again inspection became an important factor. We must know of quantity and quality of material, etc. The more contractors we had the worse we were off, for the county of Hastings was no exception to the general rule of the tendency of contractors to "scamp" their work. The small contract system was rather popular both in and out of the council. It gave patronage and strengthened with a certain class the reeve who favored it. The roads began to run down, and there must be an increased expenditure if we kept them up to proper standard. Then was inaugurated the present system which has worked so successfully for the last twenty years. I had been in the council many years—had some influence, but it required it all to induce the council to go even so far as to try it for one year. Our system was this: A superintendent of gravel roads was appointed at a salary of $700, he paying his own expenses. A committee was named by the warden to be

called "The Gravel Road Committee." This is done annually. Two or more gangs of men are engaged by the month by the superintendent, the foreman of each getting extra wages. The work was put directly under charge of the superintendent, he reporting monthly to "The Gravel Road Committee" all details as to men, wages, work, etc., the committee having full power to regulate. These gangs were moved from place to place as required. I was chairman for the first year and gave it much special attention. It was a decided success. We did more work at half the cost than in any way we had tried This induced a second year's trial, for it was not yet established. "New brooms," etc., "It won't last," was quoted, but a second year confirmed it. The strong points are :

1st. The whole work through the committee is directly under the control of the council.

2nd. The work is well done, as there is no inducement to "scamp" it.

3rd. It is done where most required at the best time to do it.

4th. The ratepayers are in touch with those performing the work, and any tendency of foremen or men to shirk will soon reach the superintendent.

5th. By employment of good men continuously at the work they become experts and capable of doing more than inexperienced hands, and this is particularly true of the superintendent.

The weak points are : You must have a competent and honest superintendent, skilled in roadmaking. Such men are not always available. Such a man the county had for over twenty years. At his death they succeeded in getting a competent successor. Another weak point, though not so difficult, is the danger of committees not holding a firm hand on the employees, but as a means to keep up the roads it is the best machinery that I know of. It is a principle that can be extended to every municipality where the roads are maintained at the public expense. The result has been that our roads are steadily improving and efficient at any season of the year for the purposes required, either by light carriages or heavy loaded draft wagons. And here let me say a word as to material. We tried broken stone, screened gravel and gravel from the pit in its natural unscreened state. Experience has shown that unscreened gravel delivered on the road with the stones that may be in it broken as delivered is the best and cheapest. I am aware there will be a difference of opinion as to the wearing qualities of broken stone and gravel in any state, but for all practical purposes in gravel road construction and maintenance I have not a doubt as to unscreened gravel being the best and cheapest.

And now a word as to the cost of our roads. At first the average cost per mile for first class roads was (over the county) about $2,000. This has been reduced by experience and the general better knowledge of roadbuilding and a better system by nearly one half. I generally put it at $1,200, others with equal experience at $1,000. Maintaining them reaches about $40 per mile, but this means maintaining them in such a way as to have them grow better annually. I note by remarks made at the last meeting of the county council that the necessary cost of maintenance is gradually lessening. We have now about 360 miles of gravel. The appropriation this year is $12,000, which would be about $33 per mile.

The style of our roads may require a few remarks. The roadbed between ditches is generally, except through swamps, 18 feet, the metal on top from 8 to 10 feet in width and at building 10 inches deep, which under our system of maintenance gradually increases. The earth is filled in at sides and the whole rounded from centre to the ditches. The first general principle in our system is to take away the water and keep it away from the roadbed. Hence good ditches and proper culverts are a first consideration. The second general principle is not to let the roads run down. Josh Billings says of a man's business that is running down, "It is as easy to get to the bottom as sliding down a greased plank." So it is with public roads. Let them get to running down, and bad roads are not far off.

These remarks have been very general and somewhat rambling, but I hope the "object lesson" I have held up may not be without benefit. Theory is one thing, but theory in practice is often another. I have given you results of efforts to improve the road conditions in Hastings and the extent of our success. I think the success attained may be attributed to the following causes :

1st. The public men of that section early learned the value of cheap transit. The county was on the Bay of Quinte, which is really a part of the St. Lawrence river, and

continually before them was the "object lesson" of cheap freights down that watercourse. Every day they were reminded that it cost more to haul a load from a point twenty miles inland than to take it to Montreal. Hence the need of good roads was continually with them.

2nd. We never varied from the road, and, I believe the only correct principle, that all leading roads should be county roads and maintained at the county expense.

3rd. It was early inculcated that good roads were a general benefit and one of the important factors in developing the country, and benefited all classes.

And lastly, that the indirect losses by bad roads not only made the country poorer, but by lessening the facilities of intercommunication became a factor in perpetuating ignorance and destroying enterprise.

And now briefly, Mr. Chairman, in conclusion allow me to refer to roads outside county roads.

My experience, I assume, is the experience of all present in reference to them. They have grown from the immediate and pressing necessities of the first settlers to their present status, and although not in the best locations for the public use, have gradually improved from the application of statute labor with an occasional township grant. The general system of their construction is regulated from year to year by pathmasters who may or may not be competent to do so. The result is just what we could expect—a very imperfect and unsatisfactory class of roads. The system must be changed before we can expect much improvement. Where are we to begin? Probably the course taken by "The Good Roads Association" is the best. The public must be educated before you can hope for much progress. He would have more than the average back bone as a legislator who would dare to initiate legislation in the direction of doing away with statute labor and systematizing regular expenditures by direct tax upon the people. And yet to my mind that is one of the things that must be done before much progress can be made. So long as road building is left in the uncertain state that now exists in rural districts, just so long will the roads fail to reach the proper standard. I don't mean more money than would be represented by the statute labor at $1 per day or say 75 cents per day. Such a sum properly expended in a systematic way would, within a reasonable time, accomplish much. Take an ordinary township with from, say 4,000 to 6,000 days' statute labor, and call this dollars, and what could be done? Let the county take charge of leading roads, as they do in Hastings, and the local municipalities, as now, take charge of local roads under some legalized statutory system, utilizing the statute labor as indicated, and wonderful things in road improvements could be accomplished. I have often thought out the details of such work, but will not attempt to trouble you with them this evening. I claim no special knowledge that is not now very general in the county of Hastings, but one thing is certain, the people must be educated all over the province before you can hope for legislation in the direction I have indicated. They must be educated up to the importance of improved roads, and away from many old-fashioned and almost fixed ideas. I know the outcry that will be raised against "being legislated for in such matters as local roads," but I would ask every thinking person who objects to this interference, what about our school system? See the effect of educating influences in that direction. Our system, said to be the best in the world (its weakness perhaps is too much system), commenced at almost the "beginning of things," and has reached its present status by wise legislation. But the legislation could only be got after educating the people up to the needs of the changes made from time to time.

For this purpose "The Good Roads Association" seems to me to be moving in the right direction. I wish you success, and anything I can do to assist will be done with pleasure, realizing as I do what I set forth at the commencement of my remarks—that roads are the arteries of trade and commerce, on which the active life of communities depend, and a certain test of the progress of the people.

The PRESIDENT: Very few persons in western Ontario know what has been done in Hastings. This paper will be a mine of valuable information.

RESOLUTIONS.

The following resolutions were passed :

Votes of Thanks.

Moved by Wm. Dickson, seconded by James Beattie :

" Resolved, that the Ontario Good Roads Association in annual convention assembled desires to thank Hon. Mr. Dryden, Minister of Agriculture, for the great service he has rendered the association in having printed by his Department for distribution 20,000 copies of the report of the proceedings of our first meeting last year ; and we hereby request Mr. Dryden to have an increased number of copies of the report of this meeting published by arrangement with the directors of this Association."

Moved by J. S. Hunter, seconded by T. S. Henderson :

" Resolved that the thanks of the Ontario Good Roads Association be extended to the Canadian press for the interest which it has taken during the past few years in the subject of road reform—an interest which has done very much to popularize the movement and advance the objects aimed at by this association. In this connection we beg to urge rural publishers especially, to avail themselves of the use of the excellent matter on the subject which is being provided by the two stereotype plate agencies in this city, which we believe will prove not only interesting to the general reader, but a great aid in the cause of road reform and the work of this association."

For Practical Work.

Moved by P. Mahon, seconded by J. F. Beam :

" Resolved, that the first and immediate work of the Good Roads Association for the coming year shall be the continuation of the work of collecting information on the subject of roadmaking and road maintenance from all available sources, and in regard to the laws of other countries on the question ; the continuation of the agitation for reform ; the dissemination of practical information in printed form and through addresses and discussions throughout the country ; the formation of local associations in every county in the province, and in towns, villages and township municipalities, so far as practicable."

Members of the board, all delegates and friends of road reform were requested to act for themselves in forming local associations, wherever desirable or necessary.

Educating Roadmakers.

Moved by W. S. Campbell and seconded by W. G. Baldwin :

" Resolved that we record our satisfaction at the interest taken by Principal Mills, of the Ontario Agricultural College, in the subject of roadmaking and improvement, as shown by the fact that, at the suggestion of the president of this association, he has arranged to have a series of lectures on the subject, to be delivered before the students of the college during the present term. We anticipate important results from this wise action on the part of Dr. Mills, believing as we do that it will lead to new avenues for usefulness for the sons of farmers who are attending the college, and who will thus, through special training and qualification be able to serve the country among the roadmakers of the future. And we beg to express the hope that the subject of road building and road maintenance will be added to the regular curriculum of studies at the Agricultural College."

After Delinquents.

The following resolution was passed with the understanding that the legislation sought would necessarily have regard to the existing rights of companies under their statutes.

Moved by A. W. Campbell, seconded by Peter Mahon:

"Resolved, that we, the members of the Ontario Good Roads Association, do petition the Legislature of Ontario to improve the law relating to toll roads. The object aimed at being such legislation as will compel road companies to maintain their roads at a much higher standard than at present; that no company shall be allowed to charge tolls where the road is not kept up to such a standard as the Legislature may fix; and that greater facilities than at present exist be provided for the enforcement of such legislation in order that the burden of legal action may fall on the community rather than on those individuals who may desire road companies to comply with the provisions of the law."

The President: The burden of proof is now upon the plaintiff that toll roads are a menace to life. We want the burden to be placed on the owners of the roads. Some toll road companies should be fined for obstructing travel.

Mr. A. F. Wood: If that resolution is passed is there not a danger of trying to fix a standard higher than in the contract as laid down in the charter?

The President: We merely ask the Legislature to go as far as is possible in that direction.

Mr. McEwing: If I understand the reading of the resolution, a person makes the charge against a company and the company must prove it to be otherwise. I think the man who brings the charge should be made to prove it.

The President: A private individual runs some risk. The state should as far as possible assist in protecting the lives and limbs of the people.

The resolution was then adopted.

Thanks to Mr. Hodson.

Moved by Jas. H. Wooley, seconded by M. Pettit:

"Resolved that this association desires to thank Mr. F. W. Hodson, superintendent of the farmers' institutes, for the assistance rendered us in placing the subject of roadmaking and maintenance among those which have been discussed at the recent meetings of the farmers' institutes throughout the province, and in the selection of a number of speakers recommended by our board, who have thus been able to bring practical phases of the subject and the aims of the association before the farmers. And we hereby request Mr. Hodson to include in his list next year, a number of good roads speakers for those districts which have not been covered in the arrangements for meetings held during the past month." Carried.

A hearty vote of thanks, moved by Mr. Beam and seconded by Mr. Simmons, was tendered to Mr. Wood for his very able and instructive paper. Those present were unanimous in expressing their appreciation of the many valuable suggestions contained therein.

Mr. Campbell, Brantford: I am very much pleased with the actual facts brought out in Mr. Wood's paper. He has shown that it is possible to put aside statute labor and pay for a general system all over the country. The experience of the county of Hastings, as detailed by Mr. Wood, has been of much interest and instruction to me. I can now meet those who have been objecting to my position regarding the abolition of statute labor. I may say here that so far as our western roads are concerned, some of them are in a worse condition than they were before the stumps were taken out of the ground.

Mr. Lowry: In Hastings we have 1,300 miles of roads kept up by the county at a cost of $13,000 a year paid by the county, and that includes all our bridges, except those costing $10,000 or over. Now if the county of Hastings can do this what is the reason that all the municipalities cannot do something similar with their township roads? (Hear, hear).

The convention then adjourned to meet at 9.30 next morning.

SECOND DAY — MORNING SESSION.

The President took the chair promptly at 9.30 and called upon the Secretary, who read his report showing that statistics had been collected from seventy-eight per cent. of the townships, not including new districts, showing: 1. Population; 2. Acres; 3. Assessed value; 4. Number of days' statute labor; 5. Commutation rate; 6. Road and bridge expenditure; 7. Road mileage; 8. Whether stone or gravel exists in the township in sufficient quantity to make improved roads. The total number of days' statute labor is 966,000, and the road and bridge expenditure is $750,000. The number of miles of road in the province not including new districts is about 50,000.

THE CONSTITUTION.

Mr. J. C. Judd, chairman of the sub-committee of the executive, formerly appointed to revise the constitution, presented his report, and the following constitution was adopted:

Article 1.—Name.

The name of this organization shall be The Ontario Good Roads Association.

Article 2.—Objects.

The object of the organization shall be to awaken general interest in the improvement of public roads; determine the best methods of building and maintaining them; secure the legislation that may be necessary for their establishment and support, and to conduct and foster such publications as may serve these purposes.

Article 3.—Membership.

The association shall be open to all citizens. There shall be no initation fee nor membership dues.

Article 4.—Officers.

The officers of the association shall be a president, first and second vice-presidents, secretary-treasurer.

Article 5.—Executive Committee.

The Executive Committee shall consist of the general executive officers and ten other members. Five members of the committee, including a majority of the general executive officers, shall constitute a quorum.

Article 6.—Headquarters.

The headquarters of the association shall be in Toronto for general meetings only; the office of the secretary to be where he resides.

OFFICERS FOR 1895.

Mr. Sheppard, chairman of the Nominating Committee, presented his report and the following officers and executive were appointed for the ensuing year:

A. Pattullo, president; J. F. Beam, 1st vice-president; A. W. Campbell, 2nd vice-president; K. W. McKay, secretary-treasurer; Executive Committee: P. Mahon, Aber-

foyle ; J. Sheppard, Queenston ; J. Beattie, Cambellton ; A. Macdougall, C. E., Toronto ; J C. Judd, Morton ; M. Kennedy, Mayor of Owen Sound ; W. S. Campbell, Brantford ; J. H. Wooley, Simcoe ; Robert Jelly, Jellyby ; E. Kidd, N. Gower, President Eastern Dairymen's Association.

The PRESIDENT : Please accept my thanks for the honor of re-election to the position of president. It has some personal disadvantages, but I will accept the position for another year. I trust that a new man will then take my place, and that we shall continue to go forward. I congratulate the Nominating Committee upon the fact that the active members of the board have been retained, and that the places of others who could not be with us as often as they and we wished, have been taken by men who will likely turn in and assist us. I look forward to an active and progressive year for our association and its officers.

A FEW PRACTICAL SUGGESTIONS FOR THE IMPROVEMENT AND MAINTENANCE OF THE ROADS IN ONTARIO

BY P. K. HYNDMAN, P.L.S., M.C.S., C.E.

The First Year's Work. The Good Roads Association has now been in existence one year. The report of its first meeting has been printed, and copies have been distributed throughout the province. Its energetic President has taken the opportunity on several occasions to address agricultural meetings on the advantages resulting from properly made and repaired roads. Beyond these facts nothing further seems to have been done, though probably it will be found, when the second annual meeting takes place, that a greater interest has been aroused in the movement throughout Ontario. It is to be regretted, however, that the proposed branches were not formed in each county, as the most direct and practical results, so far as they would be within the scope of a deliberative body, would have been obtained through their agency.

Practical Steps. It is to be feared that if matters are to be confined to the Association and to the addresses and discussions at various meetings a long time will elapse before any practical work is taken in hand. As having an authoritative position the Agricultural Department, which has already declared its readiness to do all in its power to help the movement, should be asked to urge the county councils to convene in each county a special meeting of the farmers, ratepayers and business men to discuss and decide upon some practical procedure. If a provincial road department, (similar to the scheme proposed by Col. Albert A. Pope for each State) may not be considered as the most suitable agency, the meeting should pass a resolution advocating the adoption, as the only alternative, of the English system, according to which the roads are under the control of the rural municipalities, as at present they are in Ontario. Such a resolution will constitute a definite and practical starting point, and the necessary details of administration, organization and operation can be subsequently formulated and agreed upon, and which may be the joint work of the Department of Agriculture, the county councils and the Good Roads Association.

The English System of Maintenance. Allusion has been made to the English system, which has been fully and clearly described by Mr. Sydney M. Johnson, a graduate of the School of Practical Science, Toronto, in a paper read lately at a meeting of the Engineering Society of that institution. It would be an advantage to the Association if a copy of that paper, together with copies of the discussions on it, should be obtained and embodied in the next annual report. The salient features of the English system are : (1) The division of the work between the county and parish authorities, or councils ; (2) The levy of a direct road tax ; (3) The appointment of a competent civil engineer and an adequate staff of trained assistants and overseers for each county. These are identical with the proposals put forward by the undersigned in the paper by him which appears in the printed report of the Association published last year.

The Division of Work and Funds. The work will be of two kinds, viz.: (1) Improvement and (2) maintenance. The funds for and the expenditure on each should be kept entirely distinct. For the first, the issue of municipal debentures to run for at least fifty years seems the most desirable way of obtaining the necessary money. The payment of the interest and repayment of the principal would be provided for by an assessment on real property. For the second, the levying of a special and direct road tax which will prove practicable and satisfactory. Until a better one can be devised and legalised the present statute labor tax must be utilized. Where it is possible the days of labor should be commuted into a money payment. If this cannot be done the labor should be thoroughly and suitably performed, under proper direction and strict supervision.

Selection of Roads. It has been already stated that all the roads should be classified as county and township roads. They may be either metalled or unmetalled. Those which it may be deemed advisable to improve should be fixed upon, and the remainder should be repaired to the extent required, or as the funds may allow. It will probably be found that the main travelled roads should be the first to be improved, either throughout their whole length or for a certain number of miles from the county or other large town or city, the branch roads being for the present put in a fair state of repair.

Schedule of Improvement Work. Improvement to the roads should consist of the following kinds of work: (1) Alteration of alignment; (2) Reduction of gradients; (3) Thorough drainage, both under and on the surface; (4) Special repairs or renewals and reconstruction of bridges, culverts and cross-drains, extensive repairs to slopes and the clearing out of watercourses, both inlets and outlets; (5) The formation of the surface of the carriageway to a proper cross-section and its thorough consolidation; (6) The procuring of the best material obtainable as road metal and the laying of it on the road by steam roller in one or two consecutive coats; (7) The utilization of the full width of the road allowance for carriage and footways and for rows of trees for shade and shelter; (8) The planting out of trees along the road and the establishment of nurseries for seedlings or small saplings.

Method of Maintenance and Repairs. The annual repairs and maintenance of the roads may be carried out under three conditions: 1st, For improved roads; 2nd, For existing metalled roads; 3rd, For unmetalled roads.

In a paper by the undersigned, discussing Mr. Johnson's paper on English roads, a description was given of the method of road repairs adopted by the Public Works Department of India. The chief points in the system are, (1) Renewal of the metalling by a fresh coat mile by mile, and (2) The constant maintenance, by petty repairs of the carriageway, slopes, bridges, etc., the metal required for petty repairs being stacked on the other side of the road from that on which the material for the new coat was stacked. This is the best method that can be devised for the maintenance of improved roads. The repairs to existing or unimproved roads should be carried out in such a way as to bring them up gradually to the same condition as the improved roads, as far as that can be done, so that no work will have to be undone, or be thrown away, when funds are available to improve them. The repairs to unmetalled roads should be done with the same object in view. The surface will require more constant attention to keep it free from ruts and holes, and if this is properly done, vehicles will not leave the central carriageway to pass over a harder or smoother surface at the sides, thus destroying the whole road allowance. As stated by Mr Johnson in his paper. Timely repairs are essentially necessary to keep the road surface in a proper condition and secure economy.

Railways on the Roads. A system has recently been devised and put into practice of constructing railways, similar in equipment and operation to the street railways in the towns and cities along the public roads, and several have been made and opened for traffic for short distances. They serve, in one case, to connect neighboring towns together, and, in another, to take up agricultural products at the farm gates, and bring them into the markets of the nearest city or town. For this latter purpose the system has been called "radial railways." The undersigned, more than 30 years ago, suggested the con-

struction of light railways for steam or horse power on the public roads to the late Mr. Frank Shanly, the eminent civil engineer, but the commercial conditions of the country were not ripe for a project of that nature. Since electricity, however, has been utilized as a motive power, the practicability of such a system has become assured, and the construction and successful operation of one or two of these railways has proved this. As at present devised, however, the system has one objectionable feature, viz., that it interfers with the ordinary vehicular traffic, and tends to destroy the metalled surface of the carriageway. As the system is likely to be extended rapidly, from all the large centres of population, into the surrounding country, it is very necessary, especially as the roads are to be improved, that the rural municipalities should be careful to avoid granting the franchise to these railway corporations for the construction of such lines which will have a detrimental effect on both the road and the traffic.

The best Position for the Railway. The undersigned, in his first paper for the Good Roads Association, proposed an allotment of the 66 feet road allowance, to consist of (1) a central carriageway ; (2) spaces on each side for rows of trees ; and, (3) outside these, sufficient widths for footways. In devising this, the idea occurred to him, that as, on a country road, one footway is enough for pedestrian travel, the outer width on one side could be utilized for the electric railway, where one would be required. The advantage of this arrangement would be twofold. First the passing of the electric car would neither interfere with vehicular traffic in taking up space, or in frightening horses, nor disturb or destroy the road surface, and, second, the railway could always be kept in good order, consequently costing less for maintenance, besides avoiding jolting over loose stones, and the cars could be run at a greater speed, and on more regular time. These advantages are of the highest importance, by securing safety to the travelling public, and in the saving resulting in less repairs both to the road and the railway.

The Grand Result. In conclusion it may be observed, that were the foregoing suggestions for the division of the road allowance fully carried out, the whole province would be provided, not only with good roads and a "house-to-house" railway system, but with magnificent avenues of beautiful and valuable trees, and with electrical communication, and frequent postal and parcel deliveries at almost every house and hamlet. The appearance of the face of the country would be entirely changed, and the present isolation and loneliness of the rural population would become a thing of the past. The increase to the traffic, on both the road and the railway, resulting from such facilities, would cause a great impetus to trade and business generally, and to an extension of agriculture ; and last, thought not least, it would contribute to the enjoyment of life, and to the raising of a higher moral and intellectual standard, and the inculcation of a wider knowledge and broader and more liberal ideas, together with the promotion of good-will amongst all classes. May the day soon come.

Sarnia, 7th February, 1895.

HISTORICAL ROADS.

By Alan Macdougall, C.E., M. Can. Soc. C. E.

The subject of roads, which this Convention is invited to consider, is a most interesting one, and to properly understand it, it is necessary to carry our thoughts far back to the time before the Christian era when Rome, the great mistress of the world, held supreme sway, and it is with astonishment and admiration that we find how far advanced she was in the building of fine roads, many of which would do credit to the advanced science of this present day. These roads, which spread out in every direction connecting the capital of the empire with its far distant provinces, served the same part in the civilization of that

age which the great railway systems which centre in our large cities and capitals do in the present day. Constructed of the most enduring materials, selected with special care, built under military inspection with the object of being an enduring construction, the Roman roads fulfilled in their day all requirements ; outlived the nation which built them in many parts of the world and carry in their construction methods which the best road builders of the early days of this century and the advanced street pavior of this *fin de siècle* cannot improve upon.

Public roads among the works of Roman magnificence ranked pre-eminently high. Vast amounts of labor and expense were bestowed upon them, and their construction, as we now behold them, seems to have been intended to outlast the empire. Such arteries, as they were termed, which conducted to the heart of the imperial city, were not thought unworthy of the attention of the greatest men of the republic, none but those of the highest rank were even eligible to the office of superintending them, and during the empire, Augustus himself took charge of them.

The primary object of this magnificent system of road construction was without doubt a military one, the roads were constructed for the purpose of pouring the legions rapidly into any point of danger, while the want of cross roads cut off intercourse and prevented uprising against the constituted authority.

The Roman empire comprised 11 regions, and these were divided into 113 provinces, traversed by 372 great roads, which, according to the itinerary of Antoninus, were together in length 52,964 Roman miles.

The first great road builder seems to have been Appius Claudius, the Censor, who constructed a road to which his name was given which connected Rome with all parts of southern Italy. This road was constructed with so much care that although originally built about 300 years B. C. it was in good travelling order about A. D. 400, which gives it a life of over 650 years.

Polybius, who lived 200 years B. C. could enumerate in his time three routes over the western Alps, which he distinguished by the names of the tribes on the Italian side through whose territory they ran. On the one hand lay the coast road through the lands of the Ligurians ; on the other, that through the country of the Salasse or the valley of the Dora Baltea ; while a third, between the two, traversed the region along the defile of the Dora Susind. Of these the first was the one most commonly used by the Romans under the republic, and the Aurelian way which conducted from Rome to the Cisalpine frontier on the west extended under the name of Inlia into the province.

Pompeius Magnus, who lived 100 years later, is said to have made a line of road over the Alps and Pyrenees, but it does not appear that Cæsar ever constructed any great permanent way in Gaul or elsewhere. Strabo, in the early days of the Christian era, mentioned the roads of Agrippa in Gaul (IV, 6, p. 208) leading from Lugdunum to first the Rhine, 2nd , the Somme and the channel ; 3rd, across the Cevennes to the ocean ; 4th, Massilia and Narbo.

Different Classes of Roadways.

Among the Romans the various roads were distinguished by the names, Via, Actus, Iter, Semita, Trames, Diverticulum, Divertium, Callais.

Via, answers to our common roads ; its width was eight feet, so that carriages could pass without collision.

Actus, was a road for the passage of a single carriage ; it derived its name from a measure used in surveying land, of which the breadth was four feet, and the length 120.

Iter, was a road for pedestrians and horsemen, the breadth of which was three feet.

Semita, was only half the breadth of the Iter, and when it crossed fields it was called trames, diverticulum, divertium.

Callais, was a road through mountainous districts for the purpose of attending the flocks.

These roads, peculiarly adapted for civil purposes, united with other great lines which were called military, consular or prætorian, or were named after the consuls and

emperors who had constructed them, as the Appian, Flaminian and Dominitian. They were sometimes designated by the names of the provinces in which they were situated or connected to the imperial city.

Neither time nor expense appear to have been spared in the construction of these roadways. The modern engineer could not devise any methods to eclipse those of his Roman predecessors ; it is only another instance of the adage, "that there is nothing new under the sun," when we learn that the Romans used a concrete foundation under the wearing surface of their roads, as we now-a-days put concrete under the asphalt surfaces of our best streets. The method of laying the concrete and consolidating by heavy pounders or rammers, was in use amonst the Romans, and no doubt was rigidly enforced as is required by the most up-to-date paving specification.

Having prepared the foundations, and made the surface ready for the "road metal," so to say, the surface of the grading was thoroughly compacted by being beaten down with heavy iron rammers, the prototype of the steam rolling process now in use. The selection of the paving stone was a matter of great care, only such varieties were used as were capable of sustaining weight and the action of frost without splitting ; the best quality of stone used for this purpose was called Saxum or Silex. The different strata which composed the area or mass of the road were called Statumen, Rudus, Nucleus, Summa Crusta, which together were in thickness about three feet.

In great military roads, the *Statumen* or lowest bed, was formed of two courses of flat stones, laid in mortar ; over this was the *Rudus* or rubble, well beaten ; then the third layer called the *Nucleus*, was formed of coarse gravel and lime used hot ; on this was bedded the *Summa Crusta*.

The Great Military Roads

were divided into three distinct parts, that in the middle was the most elevated and called "Agger" and had a convex form, which was usually paved with large stones of various shapes, laid to form a perfect pavement, and had a width of 15 feet 6 inches. This portion was designed for the use of the infantry, and was separated from the sides by a kerb stone 2 feet wide and 18 inches high, which served as a seat for the traveller. On each side of the Agger, there was space one-half that of the middle portion for the use of horses and carriages, so that the entire breadth of these roads was from 36 to 40 feet.

This arrangement is not unlike the present division of the principal streets in Toronto and elsewhere on which the electric car system is operated. The cars occupy the central portion, and vehicular traffic follows in a continuous line on each side.

When the road was carried over marshy districts, a framework of carpentry was provided, the sills were made of an oak called esculus, because it was not liable to shrink or warp. To protect this timber from the effect of the lime mixed with the other materials, it was covered with a bed of rushes or reeds, and sometimes straw. On this stratum of reeds or straw was laid the statumen or foundation.

The second bed was made of broken stones mixed with lime and called Rudus. When this material was composed of stones freshly broken, it was called Rudus Novum, and was mixed in the proportion of three of stone to one of lime ; but when the material came from old buildings it was called Rudus Redivivum, and then an additional portion of lime was used in the proportion of two to five, and the work termed Ruderationem ; the mixture was carefully rammed or beaten to strengthen, equalize and smooth it. This composition whether formed of gravel or debris was nine inches in thickness after it was thoroughly rammed. Over this tarris or ruderation, a cement was used for the third bed, composed of brick, potsherds, broken tiles mixed with lime, using one of lime to three of brick ; this was spread over the ruderation in a thin layer to receive the fourth bed or paving which served as a covering to the entire work, and was called in consequence, Summa Crusta.

The third bed or Nucleus was the softest layer of the whole, interposed between what was harder. The stones and cement which formed the road were not less than six inches in thickness.

Unpaved Roads

were called Vias Terrenas to distinguish them from those dressed with stone or gravel; they were regulated by similar laws and ordinances as the others. The road from Spain to Italy, through Nismes, was of this kind, and only passable during the summer months. These roads were kept exposed to the action of the sun and wind, all shade being removed that they might speedily dry.

Bridges.

On the subject of bridges a great deal could be said did time permit. The structures were not only works of admirable engineering design, but they were models of architecture, grace and beauty, frequently embellished with beautifully designed and constructed triumphal and monumental arches over the roadways, placed at the ends, and sometimes in the middle of the bridge.

Drainage.

In addition to bridges built over large streams, great care was bestowed on drainage. The subsoil was carefully drained by culverts which were used not only to effectually drain off all that might be injurious to health and cleanliness, but also to afford a better foundation. Pliny relates that when M. Scauras wished to transport 360 marble pillars, each 38 feet in length, to his theatre on the Palatine mount, the inspectors of the sewers demanded security to repair any damage which might occur; after he had completed his house the sewers were examined, and, fortunately for him, were found not to have sustained any injury.

Slow Travellers.

The Romans, notwithstanding the goodness of their roads, were not very fast travellers. Augustus when he went to Præneste, a distance of only 25 miles, usually halted for the night about half way; Horace tells us he performed his journey to Brundusium which was distant about 43 miles, in the same time, but he observes that an expeditious traveller could perform the journey in one day.

The heat of the day was too oppressive in many months of the year for journeying by day; the commerce of Rome was carried on chiefly by river, and the necessities of warfare no longer required the passing and repassing at all hours of soldiers, couriers and munitions. The practice of riding by night seems to have been generally adopted, so that the movement on the roads gave little sign by daylight of the vicinity of so vast a haunt of human beings with their manifold interests and occupations.

The Ways Described.

I fear I will but disappoint you in the feeble description I am able to lay before you of some of these magnificent roadways as they existed in the proud days of the glory of Rome. Eighteen well-appointed roads pierced the lines of the Servian wall which still bounded Rome in the time of Augustus. These roads which were in themselves monuments of engineering skill, required no further adornment than the massive retaining walls, bridges and viaducts which conducted them over marshes and rivers, and yet as the metropolis was approached, works of another character added another style of ornament. Long before reaching the gates of the city, suburbs stretching far into the country and surrounding plain bordered on these roads; many a pretty villa would nestle in a grove of trees, whilst the mansion of the patrician would rear aloft its proud head. The practice of erecting memorials to the dead had been in use for over twenty generations; the highways were lined with sepulchres for several miles beyond the gates, and many of these edifices were of considerable size and architectural pretension, as they were the resting places of the nobles only, and each patrician family pointed with pride to its own mausoleum, in which it gathered the ashes of its members, and often of its slaves and freedmen, beneath a common roof.

Via Appia.

The Via Appia or Appian Way, named from its constructor Appius Claudius, was the most magnificent of all Roman roads, and perhaps the finest the world ever saw; extending from Rome into southern Italy it became the trunk line of communication through that part of the empire. Appius, who lived about 300 years B. C. constructed this road as far as Capua, a distance of 120 miles from Rome, which would probably bring it to the boundary of the empire as it then existed. Strabo, a writer in the first century, says the road was 360 miles in length, and Procapius who lived about A. D. 370 says its length was so great that it could not be passed by a traveller going at a swift pace in less than five days; that its breadth was sufficient to allow two chariots to pass without inconvenience, and that it was paved with large blocks of stone, brought from distant quarries, dressed and squared with the chisel and joined very exactly without the aid of metal or any other material; the work was so perfect that it seemed as if nature had performed it rather than man, for the very joints were imperceptible.

Appian Way

is remarkable for its foundations, its construction over deep valleys and hills; its bridges, and for the canal which accompanies it through the Pontino marshes, for the double object of draining the land and conveying the materials of war.

The "Queen of Ways," as it was proudly termed, was of all the ways, the oldest, the longest, and most frequented, approaching the city from the south it was flanked by rows of historic marble and crossed by the gaunt shadows of funeral cypresses. At a distance of five miles from the city walls it traversed the famous plain where the Horatii decided the fate of the young republic, and where the monuments of the Roman and Sabine champions had fallen. Near the first milestone, it passed under the arch of Drusus, and thence descended a gentle slope into the hollow of Aqua Crabra, where lay the sepulchres of the Scipios, the Furii, the Manilli, of Horatia slain by a patriotic brother for her devotion to a foreign lover. The descent to the Aua Crabra was crowned by the temple of Mars which fronted the gate of the city.

Still nearer to the gate, on the right side of the road, were the twin temples of Honour and Virtue, vowed by the great Marcellus for his conquest of Syracuse, which he had adorned with the earliest spoils of foreign painting.

The Flaminian Way.

was the great northern road of Italy, leading from Rome to Ariminum (Rimini) on the Adriatic. It was constructed by C. Flaminius, B. C. 220, to secure free communication with the Gaulish territory, and was one of the most celebrated and most frequented roads of Italy during both the period of the republic and of the empire. Its importance was so great that when Augustus appointed persons of consular dignity road surveyors for the other highways of his dominions, he reserved the Flaminian Way for himself, and renewed it throughout its whole length.

The Domitian Way.

commenced at Sinuessa and branched out of the Appian Way, continuing its course along the seashore, crossing rivers, and continuing its direction through the marshes of Linturna, it terminated at Pozzuoli.

Though of no very great extent, it was of the greatest use as it enabled travellers to cross many marshes and quicksands by means of bridges and causeways constructed at a vast expense; in many places masses of concrete were thrown into swampy places, and the distances formerly passed, greatly shortened. All the long detours were avoided. Statius tells us that a triumphal arch was raised to Domitian by the Senate and Roman people in gratitude for the benefits bestowed upon them by this work.

Prænestine Road.

Mention may be made of the Prænestine Way, a magnificent road, which was carried over marshes on arches which rivalled the aquaducts in their beauty, the upper parts being decorated with statues.

Roman Roads in Britain.

The policy of constructing and maintaining a ready access from the capital to all the provinces and dependencies of the empire, developed an extensive system of roads in Spain, France, Britain and other European countries, and it is said, even in Egypt. The history of road-making in the country from which so many of us are descended and to whose Crown we all owe loving and loyal allegiance, will give many interesting illustrations of what bad roads were, and how they were improved and became fit rivals to those of the great Roman empire.

The first roads which ever traversed Britain were the handiwork of the Roman invader, two very important works having been constructed across the island, one in the north of England from Newcastle to Carlisle, and the other in Scotland from the Clyde to the Forth; the necessity of keeping up close communication with the legions quartered at numerous outposts on these works of defence, called for good roads. Anticipating by several centuries the famous hymnologist Dr. Watt, the Romans accepted the aphorism that

"Satan finds some mischief still
For idle hands to do"

and impressed into service all the people "least they should be idle and plot mischief against the empire," and set them to make roads. Perhaps in that day there may have been colonization roads, and some statute laborers who did not believe in hard work, as the Britons complained that the "Romans wore out and consumed their bodies and hands in clearing the woods and paving the fens, with a thousand stripes and reproachful indignities." During the period Agricola governed Britain, several ways, or roads, were joined and thorough communication established between distant parts of the country.

The most famous of these roads are handed down in history, as Watling street, Ickrield or Ikeneld street the Fosse Way, and Ermin street.

Watling Street.

The most important of these thoroughfares commenced at Dover and passed through Canterbury and Rochester to London; thence northward, it extended to two important military centres now the cities of York and Chester, and were carried on northward to the wall of Agricola, one branch terminating at the city of Carlisle, the other at Newcastle. I regret to offer you such a poor description of this important public work. I have been unable to obtain any description of it during the days of its usefulness.

The remains of the roadway are a constant mine of interest and source of delight to the archæologist and historian, as year by year some fresh excavation reveals the evidences of the long buried conqueror, and gives us glimpses of a civilization which can compare most favorably with that of our day. Not more than two years ago a most interesting find was made of a kit of carpenter's tools, the shape of which are exactly the same as those in use to-day, and what caused most interest was an iron plane of the exact model made in the States, and protected by patents.

Ickrield or Ikeneld street conducted from Norfolk southwestwards to the vicinity of Land's End.

The Fosse Way ran diagonally through Bath to Lincoln.

The Ermin Street, led direct from London to Lincoln, with a branch to Doncaster and York.

British Roads.

When we pass from the period of the Roman occupancy, we enter on a long cycle of time in which the history of roads is a blank. It is not until 1285 that we find the first

law passed, but we cannot say that during this period there was nothing done to open up the country by means of roads. The religious houses which sprang up over England and Scotland which were the recipients of immense gifts from king and peer, and the founders of those magnificient abbeys, colleges and other buildings which have been the constant admiration of succeeding generations, must have constructed roads, as reference is so constantly made to travellers in the charters and cartularies. In the foundation of nearly all religious houses it was stipulated that hospitality was to be shown to the wayfarer, and we know that this was liberally exercised. Many of these abbeys had monastic establishments of various degrees attached or under their jurisdiction, which must have entailed a constant communication between the establishments. The friars and other members of the institutions must have used pack animals of some kind to carry supplies, and if the roads were but bridle paths or bush-roads, they called for the construction of many fine bridges which are in use to-day. To mention but one case in illustration. When the Abbey of Melrose was founded by King David, he gave the Abbot supremacy over the Abbey of Newbattle, a few miles out of Edinburgh and about 30 miles from Melrose. The necessary communication between these establishments caused the construction of a road and several bridges, one of which, close to the old Abbey of Newbattle, is a beautiful structure, which has withstood the ravages of wind and weather for over 600 years. I know this bridge well, and have driven over it many a time.

Professor Innes in his sketches of early Scottish history, mentions a number of important ancient bridges, one over the Tay at Perth being erected in the 13th century, others over the Esk at Brechin in Forfarshire, the Dee at Kincardine, O'Neil and Aberdeen, over the Don in the latter city ; over the Clyde at Glasgow, the Forth at Stirling, etc. "When we consider," writes the Professor, "the long and united efforts required in the arts for throwing bridges over any considerable river, the early occurrence of bridges may well be admitted as one of the best tests of civilization and national prosperity."

The first Act was passed in the reign of Edward I, in 1285. Owners of lands were enjoined to widen the roads by cutting down the trees on each side for a certain width. Half a century later in 1346 under Edward III, a law was passed to levy toll on some roads leading out of London which were reported impassable ; but it was not until the year 1555, in the reign of Henry VIII, that laws were enacted binding parishes to take care of the roads and annually select qualified persons to superintend them.

Turnpike roads were established after the return of Charles II, and Acts were passed in the second year of his reign for widening and repairing some of the public roads. The first relates to that from London to Scotland which passed through Hertford, Cambridge and Huntingdon.

Many subsequent Acts followed, but the important laws were combined in 13 Geo. III, which was again modified by 3 Geo. IV.

A brief reference to the progress made in turnpike legislation will not be uninteresting. During the years 1700-50, one hundred and sixty-four Acts were passed ; in the next decade, one hundred and eighty-five, and in the next, 1760-70 one hundred and seventy-five, making a total of 524 Acts.

Highland Roads.

The Highland roads constructed under the direction of Telford by the aid of parliamentary grants were of immense benefit to that part of Scotland ; some of these roads were mere tracks. It was sometimes necessary to carry the lime for making the mortar in sacks on the backs of horses for upwards of twenty miles.

It is a most remarkable circumstance, and perhaps a bright illustration of the ingenuousness of the Scottish contractor for which he does not receive credit, that during 18 years in which 920 miles of roads and 1,117 bridges were built, recourse to a court of law was not had in one instance.

The period of greatest activity in road construction commenced about the year 1760, just about 1,700 years after the country had been benefited by the construction of that splendid public work, Watling street. When we read of the condition of the roads one

hundred years ago, it seems incredible that such a backward condition could have existed in the two countries to which we look with pride as the great civilized forces in the world's history.

Coaches.

Coaches were first introduced into England about the time of Elizabeth. Public or hackney coaches were only established in London in 1625, and stage or travelling coaches not until a much later period; owing to the almost impassable condition of the roads, coupled with the fear of assault from highwaymen, they seldom or ever travelled during the night. In 1666, a coach was established which travelled between London and Oxford in two days, and another called the Flying Coach performed the journey in 13 hours, or at the rate of four miles an hour, but only ran in the summer months. In 1712 the stage coach took 13 days to journey from London to Edinburgh, and to-day the journey is accomplished in nearly half that number of hours. After the roads had been somewhat improved, mail coaches were introduced by Palmer in 1784 to carry passengers and letters, and the journey between London and Edinburgh was reduced to three days and nights by these conveyances. As the condition of the highways improved, so the speed of the coach advanced till the journey was reduced to 42 hours between the two capital cities, and this appears to have been the limit of endurance for animal strength, the resulting speed being at the rate of 10 to 12 miles per hour. In 1821, there were 24,581 miles of turnpike roads in England and Scotland, and 8,000 miles in Ireland.

Let me tax your patience but a few minutes longer with one or two brief extracts of travel "in the good old days when George was King."

In 1754, some enterprising Manchester men advertised a "Flying Coach" for the convenience of travellers between that town and the metropolis; and lest they should be classed with travellers of the ordinary kind, they heralded their enterprise with this statement: "However incredible it may appear, this coach will (barring accidents) arrive in London in four and a half days after leaving Manchester." And that same trip is now covered, daily, in the same number of hours.

In September, 1789, the Prince of Wales left Wentworth Hall where he had visited the Earl FitzWilliam, and took the road for London in his carriage; when about two miles from Newark the Prince's coach was overturned by a cart in a narrow part of the road, it rolled down a slope, turning over three times, and landed at the bottom shivered to pieces. Fortunately the Prince escaped with only a few bruises and a sprain, but the accident had no effect in stirring up the local authorities to make any improvement in the road.

The most unfortunate of all travellers appears to have been Mr. Arthur Young, who made a six weeks' tour through the southern counties of England and Wales in 1769.

Travelling on the turnpike between Bury and Sudbury in Suffolk, he says:

"I was forced to move as slow in it as in any unmended lane in Wales, for ponds of liquid dirt and a scattering of loose flints just sufficient to lame every horse that moves near them with the addition of cutting vile gripes across the roads under the pretence of letting the water off but without effect altogether, render at least 12 out of those 16 miles as infamous a turnpike as ever was beheld."

Between Tetsworth and Oxford he found the so-called turnpike abounding in loose stones as large as one's head, full of holes, deep ruts, and so narrow that with difficulty he got his chaise out of the way of the Witney wagons. Of another road he uses the term "barbarous" and "execrable," and designates that from Gloucester to Newnham as a "cursed road" "infamously stony" with "ruts all the way." From Newnham to Chepstow he noted another bad feature of the roads, with which we are not unacquainted in this country, and that was the perpetual hills: "for" he says, "you will form a clear idea of them if you suppose the country to represent the roofs of houses joined, and the road to run across them." So bad was the condition of the road between Leominster and Kingston, that it was a matter of grave dispute whether it would not cost as little money to make it navigable as to make it hard.

To the west of Kingston our traveller found roads over which he relieves himself in this wise, "But, my dear sir, what am I to say of the roads in this country? The turnpikes, as they have the assurance to call them and the hardiness to make one pay for; from Chepstow to the half-way-house between Newport and Cardiff, they continue merely rocky lanes full of hugeous stones as big as one's head, and abominable holes. The first six miles from Newport they were so detestable, and without either direction-posts or milestones, that I could not well persuade myself I was on the turnpike but had mistook the road, and therefore asked everyone I met, who answered me to my astonishment, Ya-as. Whatever business carries you into this country, avoid it at least until they have good roads; if they were good, travelling would be very pleasant."

With one reference to the Lancashire roads between Proud Preston and Wigan I will close. "I know not in the whole range of language terms sufficiently expressive to describe this infernal road. Let me seriously caution all travellers who may accidently propose to travel this road to avoid it as they would the devil; for a thousand to one, they break their necks or their limbs by overthrows or breaking down. They will here meet with ruts that I actually measured *four feet deep* and floating with mud, only from a wet summer. What, therefore, must it be after a winter. The only mending it receives is tumbling in some loose stones which serve no other purpose than jolting a carriage in the most intolerable manner. These are not merely opinions but facts, for I actually passed *three carts broken down* in those eighteen miles of execrable memory."

In conclusion, let me refer but briefly to a very important event which took place last summer, and cannot be overlooked in this meeting of our Good Roads Association. I refer to the long distance ride from Sarnia to Montreal, undertaken on the 15th and 16th June, when 220 riders carried a message of congratulatory greeting from His Excellency the Governor-General of our province and numerous mayors of cities to the mayor of Montreal, a distance of 551½ miles, in 33 hours, 26 minutes, 38 seconds, being at the speed of 16½ miles per hour. This was not a mere holiday outing, or the frolic of some pleasure-loving cyclists. It was a splendid demonstration of the capabilities of good roads to further rapid transit, and a practical lesson to all who are interested in opening up traffic off the lines of railways, of the immense possibilities of good roads. All these relay riders and the dignitaries of the towns passed through, in earnest, as they perceived in this ride for speed, the best test which could be applied to our roads, and accepted it as the most direct method of bringing before the public attention the important subject of road reform and the benefits arising from good roads.

DRAINAGE LAWS APPLIED TO GOOD ROADS.

By Judge Woods, Chatham, Ont.

Having been asked by your Association to prepare a paper on "The Lesson of the Drainage Laws applied to Good Roads," I have endeavored to comply with the requisition as fully as I appreciate its scope.

As drainage is the first essential, the primary factor in, and the very basis of a good road, whether of earth, gravel, stone, asphalt or other material, it affords a good starting point in the enquiry that would promote good roads. Drainage, till within a few years, was confined to the Ditches and Watercourses Act, and the functions of the fence-viewers. By the Act of 1834, it was provided by section 1 that it should be lawful for the inhabitant householders of each and every township at their annual town meeting for the election of township officers, to choose from among the inhabitants of the said township not less than three or more than eighteen fit and discreet persons to serve the office of fence-viewers. By section 16 it was provided, "that whereas it is expedient to provide for the opening of watercourses in this province in all cases where it shall be to the joint interest of parties resident within this province to open a ditch or watercourse for the purpose of letting off surplus water from swamps or sunken

miry lands in order to enable the owners or occupiers of such swampy or sunken land to cultivate or improve the same, it shall be the duty of such several parties to open a just and fair share of such ditch or watercourse in proportion to the several interests that such parties may have in the same; and in cases where a dispute shall or may arise as to the part, width, depth or extent that any party so interested ought to open or make, the same may be referred to three fence-viewers; and it shall be the duty of such fence-viewers to decide or apportion such ditch or watercourse among the several parties, as in the opinion of such fence-viewers shall be a just and equitable proportion, having due regard to the interest each of the parties shall have in the opening of such ditch or watercourse, and at the same time decide what length of time should be allowed to the parties to open his or her share of such ditch." Section 17 provided that ditch or drain may be opened at their own expense by parties interested across lands of persons not interested, and the neglect of the award which was to be filed with the clerk of the township was to be supplied by any of the other parties and the expense recovered before the Court of Requests. Previous to this Act such duties were performed under the Act of 33rd George III., 1793, by the overseers of highways and roads. Here we have the genesis and germ of the drainage law as we find it to-day, and resting upon the simple basis of division and apportionment that governed a line fence dispute. Apply this principle to a line of road and it adjusts itself just as readily to this as to the fence. Three of the inhabitant householders are the judges, and the decision of two final and enforceable before the cheapest tribunal. In 1845 by 8th Vict., c. 57, the above Act was repealed and our present law respecting line fences and watercourses put on the statute book.

This condition of things continued until the Honorable Mr. Baldwin's Act of 12th Vict., 1849, giving us a more enlarged system of municipal government than that enacted by 4th and 5th Vict. It provided that townships shall pass by-laws for the erection, construction or repair of such drains or watercourses as the interests of the inhabitants shall in the opinion of the municipality require to be so erected, constructed or repaired at the public expense of such township. And further that the county council should pass by-laws for the same purpose. Then followed the 22nd Vict., c. 99, 1858, as to the obstruction of streams and watercourses, providing that every township may make by-laws for preventing the obstruction of streams, creeks and watercourses by trees, brushwood, timber or other materials, and for clearing away or removing such obstructions at the expense of the guilty parties or otherwise, and for levying the amount of such expense in the same manner as taxes are levied and for imposing penalties on parties causing such obstructions.

By section 271 of this Act, 1858, it was further provided that in case a majority in number of the resident owners of the property in any part of a township do petition the council for the draining of the property (describing it), the council may procure an examination to be made by a competent engineer of the property to be drained and may procure plans and estimates to be made of the work by the engineer.

By section 272, if the council is of opinion that the draining of the locality described would greatly benefit the township the council may pass a by-law:

1. For providing for the drainage of the locality.

2. For assessing and collecting from the proprietors of the several lands immediately benefited by the draining, so much of the cost thereof, and of procuring the plans and estimates to be made, and of all other expenses incident to the work as may not exceed the benefit of the lands respectively derived from such draining, and in proportion as nearly as may be to the benefit to each of the proprietors thereof.

3. For regulating the time or times of payment.

4. For ascertaining and determining through the engineer what real property will be immediately benefited by the drainage, and the proportion in which the assessment should be made on the various portions of the lands so benefited, and subject in every case to an appeal to the Court of Revision and the county judge in the same manner and on the same terms as nearly as may be, as in the case of an ordinary assessment.

5 But the by-law shall not be valid unless before the final passing thereof the same is published once or oftener in every week for three months, in some paper published in the township, or if no newspaper is published in the municipality then in some paper published in the nearest municipality in which a newspaper is published.

In 1866, under the Coalition Government, with Sir John A. Macdonald as Attorney-General for Upper Canada, the Hon. Mr. McKellar, M.P. for this county (Kent), as chairman of the Municipal Committee of the House, introduced the Consolidated Municipal Bill in which the clauses of 1858 relating to drainage in townships are largely changed and added to, the most important of which was for assessing and levying upon the property to be so benefited, a special rate sufficient to include a sinking fund for the repayment of debentures which the township council was authorized to issue.

These clauses made a new departure, and under them a great change took place, and especially in the counties of Essex, Kent and Lambton. In the county of Kent over a million and a half of dollars has been spent in this work with incalculable benefit, including assessments ranging from $200 to $50,000 in a single drain. Lands that were refused at 50 cents per acre within four and five miles of Chatham, have been sold since the drainage of them at $80 per acre, and have grown the most abundant and profitable crops, with cornstalks reaching fifteen feet in height.

The procedure is so simple and the benefits so great that the Act has been resorted to most freely. The experience gained under the working of it leads to the opinion that it would form the best basis for a road Act—the simplest, readiest and cheapest—under which a road of one mile or ten could as readily be made.

Then the confidence felt that the means would always be at hand for the best kind of road if required, would lead to a prompt adoption of it.

Its voluntary character, the absence of a vote or other expensive procedure and the large number of contributors, make it a ready and easy way of gaining the end. The contributors would be: (1) The owners of the lots on the line; (2) those in the rear; (3) the township; (4) the railways; (5) the county; (6) the towns to and from which the road ran, and all with right of appeal.

So far as I can judge, this presents as good a basis with all necessary precaution and restraints as any of the road Acts of the neighboring states, with far less of the coercive element in it than is to be found with them.

It is estimated that in this county, in the townships through which the ridge passes, roads may be made with a traction engine at the rate of 75 cents per yard, equal to a cost of $500 to each 100 acres, and that a fair assessment for each of the owners on the front on either side of the road would be $100, $50 on the next range and $20 on the third, which would be $340, and leaves $160 to be made up by the township, town, villages, county and railways. For this, upon the equal instalment plan, extended over 50 years with interest at five per cent., the owner of 100 acres would have to pay $5.45 each year, the other $2.75, the third $1.09, and such charge for maintenance as the engineer would fix.

Where is the objection to an assessment for benefit like this? If the engineer, in his professional judgment and experience, assigned a longer area to benefit there would be a corresponding reduction. Benefit, here, is no uncertain quantity.

But let me present what I consider a reasonable and yet a powerful illustration of what can be done through our municipal resources towards making roads of the most permanent character. Let the county borrow $500,000 to make 250 miles of road at $2,000 per mile at five per cent. This means $25,000 per annum. The assessable property of the county is $25,000,000. A rate of one mill on the dollar would give us the required interest, which would be an average of only $1 on each 100 acre farm valued at $1,000. It would take $27,400 annually to pay off the principal and interest in fifty years at five per cent. But I am told by good authority that if the Government in its desire to promote road-making throughout the province should guarantee the bonds of the county, money could be got at two and a half per cent., and as a township bond would be as good security as a county one, this advantage would accrue to the lesser municipality as well as to the greater. Here would be the saving of $12,500 at once annually.

Now the question of cost is a varying one, and while $2,000 would be a maximum a much lower cost would be the case, and Mr. Campbell, of St. Thomas, with his large experience, set us a good road at $1,800.

The question *maintenance* is also a varying one, being set by good authority at three per cent., while Mr. Campbell says four and a half per cent.; but this is easily disposed of by the engineer, and with a system of prompt, regular repair, would prove to be a much less serious question than is made of it by some persons.

We must recollect that roads differ materially from drains, and will not give rise to the many questions connected with them. The highlander and the lowlander do not appear on the roadside. The work is more defined and direct, and less open to the conflicting views of the assessed or of the courts in which they seek to resolve opposing views. Then it is more general in its effects: The drain is limited to the *owner*; the road, on the contrary, is a benefit to every one in the community whether he travels it or not; it takes in the resident and the non-resident, the stranger as well as the resident, and invites the stranger to a better acquaintance with it and the country through which it passes.

In 1891 an Act based upon the drainage clauses relating to the improvement of roads, *mutatis mutandis*, was passed by the Legislature, but it had two or three restraints which practically rendered it inoperative:

1. All the owners of the property, instead of the majority, as in the Drainage Act, had to petition.
2. The usual time for debentures, instead of fifty years.
3. That the town lines or roads between the municipalities were not included.

That Act referred to the old drainage system, which by the last Act has been superseded.

Then the judges have intimated that that mode of legislation is unwise, and that difficulties would be avoided if a separate Act in such cases were passed. The present Act provides:

1. A simple form of petition prescribed.
2. A means of submitting to the people interested the engineer's proposed plan and allowing the petitioners to abandon it.
3. A simple and inexpensive mode of deciding all disputes in a judicial way, making precedents, by the referee.

Here we have the drainage law, and I think in the judgment of those best acquainted with its workings, the municipal men, the engineers, lawyers, the commissioners to enquire into our municipal institutions, our judges and the people who have experienced its operations and observed its workings, are of the opinion that it affords the best means for attaining the end in view.

REPORT OF COMMITTEE ON RESOLUTIONS.

The report of the Committee on Resolutions was presented and considered.

"Resolved, that this association hereby request the directors for the coming year to send out circulars to the various municipal councils of the province, to the agricultural associations of various kinds, the boards of trade and other representative bodies, to local good roads associations, and to be submitted to meetings of ratepayers, to ascertain what public opinion is on the subject of road improvement and the laws relating thereto. That such circulars request replies to such questions as the following:

(*a*) In what direction can the statute labor system of this province be improved: 1, by the revision of the laws in reference to it; or 2, in the practical working out of the system?

(*b*) Would you favor the passage of legislation which would permit municipalities, through a vote of the people, to abolish statute labor and build and maintain their roads through taxation, as they provide for other corporate expenditures?

(*c*) What other suggestions have you to make, if any, as to the best means of securing improvement in the making and maintenance of the streets of our towns and the rural highways of the province?"—Adopted.

The PRESIDENT: We want to get at public opinion. The first question generally put to me at public meetings is, "Do you want to abolish statute labor?" My reply is, "Well, if you are satisfied that statute labor is capable of doing all that we desire in the way of good roads please tell us all about it." I like to throw upon the advocates of statute labor the onus of proving that it is a benefit and superior to the plans of improvement suggested by road reformers. It also brings into the arena of the discussion what should be done in case statute labor is abolished. We get at the public through local associations, farmers' institutes and other bodies. We must keep the public informed and thus help to create public opinion on this subject.

Mr. W. G. CAMPBELL, Ekfrid: I am here to tell you how your "Good Roads circular" was received at our municipal council meeting. It was the first meeting I attended as a councillor, and we had the communication from this association asking that the municipal corporation send a delegation. The other members of the council wanted to "fire it under the table." I said that someone ought to be there. Then one of them said, "You are going to the Central Farmers' Institute, stay a day or two longer and take in the good roads meeting. But, Campbell, for God's sake don't commit yourself." (Laughter.) But when I get home I am going to talk to them, and let them know what the spirit of this meeting is. In our county of Middlesex we have some good roads and some bungled roads, too, and can stand improving. In sending out men to address farmers' institutes on this question never mind whether or not they have got "callous" on their hands; let them have brains. Mr. Campbell, the civil engineer, for instance, was reared on a farm, but he has also had a good education, and is none the worse for that. I have some brothers in the professions who come home on a visit occasionally, and they can do as good work still plowing or sowing as I can. Send us the best equipped men mentally and practically you can. One of our councillors also said that this association was a bicycle rider's affair. Well, I can ride a bicycle myself; but we do not ride bicycles at all times of the year. In the old days, when we got some of the Sandfield Macdonald surplus, the municipality dug a ditch and put some gravel into it. We have since taken that road and put it in good condition, but most of the money put into that ditch was lost. I can point to another portion of a road in our county near Glencoe that has been ruined because a man who had been a reeve was given the job. I was pathmaster for a year or two, and I made the men who drew gravel draw as much for five days' work as the commissioner had drawn for $5 in his year, and I found that the people were satisfied. Now I am in the council, and I never knew I was so great a man till I had this one and that one coming to me and saying, "Can't you make me pathmaster for this year?" (Laughter). I have learned this already that it is not wise to attempt to force anything upon township councils. Leave it so that they may take it up if they want to. Keep up the agitation, and they will soon come to the proper thing. Some councillors make good commissioners and some make bad ones; and I am afraid some councillors are apt to use their influence in roadmaking to help them in the voting the following year. But I do not think it is according to the spirit of independence of parliament that the men who vote public moneys should also spend them. The council vote money in our township, and then they spend it, as each councillor is a commissioner in his own township ward. I believe there ought to be an independent commissioner, for it is only human nature to give a little favor in the direction of those who will give you votes.

The PRESIDENT: Some years ago, when agricultural improvement was suggested, they used to talk about "scientific farmers," and they did not want to listen to them, but now the men most in demand at our dairy associations are men of scientific acquirements and special training. I trust that in the future our civil engineers will come more and more to the front in the public advocacy of good roads. Regarding wheelmen, I think we have only one bicycle rider in the association. We will not build roads for

the wheelmen, but I believe the time will soon come when nearly every young farmer will ride a wheel, and he will need good roads for that reason also. It is natural that the wheelmen should favor good roads, and some of them assist in raising money to help the good work along.

Mr. Thos. Pascoe, Durham Co.: My friend Mr. Campbell, has spoken about having township wards set apart. We have had the same in our township. We have had meetings of our farmers' institute, and the people are being urged to attend them, but so many say, "We don't want to come out to these institute meetings. We know as much about practical work as any of your professors." But if you will go to their premises and make an inspection you will find that these men do not know very much about farming. We have some good roads in our district, but the trouble is to get good pathmasters appointed. Let me give you a little of my own experience. I had one man who had some colts, and he had to draw the gravel a long way. I told him that he must draw as much as the other men were hauling. "But," he said, "I have colts." "Well," I answered, "draw a few extra loads." He said to the others that I would not be pathmaster long; but afterwards, at an institute meeting, he said of me, "There's a man who will do his duty." I have not lost votes, for I have been elected four times since without opposition. It pays a man to do his duty.

The Direction to Move In.

Resolved, that there be a Legislative Committee of this Association, to whom shall be referred all questions as to the improvement of our laws relating to roadmaking and maintenance; that this committee shall consider during the coming year, after a thorough study of the question, the direction in which the statute labor system can be improved, where there is a desire to retain it, with the following suggestions from this meeting.

(*a*) That the number of pathmasters be decreased by the increase of the beats over which they have jurisdiction.

(*b*) That provision be made for the selection of pathmasters through merit and for special knowledge of roadmaking and repairing; that they be given power to call out statue labor at any season of the year when needed; and that they be paid some remuneration for the time, in excess of the labor for which they themselves are liable, during which they are actually engaged by direction of the municipal council, at work on the roads or in superintending work that is going on.

(*c*) That a member of each municipal council, or some other competent person be appointed by the council or the people as road overseer, who shall have the supervision of all work done by the pathmasters, and who shall report each year on the work done by them; that the remuneration of such overseers, if any, be fixed by the municipality.

And that this committee investigate the subject of legislation through which the use of broad tires can be encouraged and narrow ones discouraged.

That they also consider the whole question of optional legislation for such municipalities as may desire, by vote of the people, to abolish the statute labor system. That among other things, they report on a plan by which the roads of each county can be divided into county and township roads, the former to be under control of the county council and the latter under the control of the various township councils.

That such legislative committee shall report on this and other matters as it may deem fit at the next convention of this association.

Mr. Judd: Last evening I had occasion to speak upon the question of the system of pathmasters, and perhaps some misunderstood me. I do not intend to enter into a tirade against pathmasters individually. But I cannot speak too strongly against the system by which pathmasters are created and permitted to act. Nine times out of ten the pathmasters are the best fellows personally we have in the township, and for this reason they do not like to press matters against their neighbors We would have better roads if we had more councillors like the gentleman from Middlesex (Mr. Campbell)

who spoke this morning. We want men with back-bone. One of the greatest evils we have in Toronto is the "ward heelers." Some of our pathmasters have no more fitness for the position than a dog has for a flower garden. We want a road commissioner who will be the head, front and foremost of the whole affair. There must be a head in every business that would be successful. It is now too much head, all heads, which in effect means no head at all. When the question of repairs comes in there is now no one to look after the matter. All road repairing should be made under direction of a commissioner, who would have the entire control and management. But when you put a councillor in that position it is practically going back to the old system, and in some respects making it worse. Some members of the council are not sufficiently educated to acquire a proper knowledge of it. We have a grand reputation for our cheese in Leeds, but we have bad roads still; but the cheese industry would be more prosperous still if th roads were better. There must be a commissioner, and if he shows himself to be a good man it will take a good deal to put him out. It is just as easy a thing to elect your road commissioner as it is to elect your councillors. If you allow your council to appoint the road commissioner it means that some friend of the councillors is likely to get the position.

A Voice: Where are you going to get him?

Mr. Judd: Nominate and elect him just as you do a councillor. Let it be permissive with the people to elect a road commissioner, or allow the council to appoint him. You know how it is now in the appointing of an assessor; what a lot of wire-pulling and petty squabbling there is over it, or over the position of collector, and all for a paltry $40 or $100 a year. In order to get all we possibly can out of statue labor it is absolutely necessary that we have a road commissioner of good calibre, and we cannot allow the council to appoint unfit men to such a position.

Mr. Rittenhouse, Lincoln: I have had nineteen years' experience as a pathmaster, and I may say that it is not advisable to change even this method. We have some men in our township who have not been changed in nineteen years. We have others where men are being continually changed, but the roads are not in as good condition in the latter cases. If you get good men as pathmasters let them be as permanent as possible. As regards stone, gravel and clay roads, I would say that for many years to come we will have to depend a great deal on clay roads. And this being the case we will have our roads cut up very much so long as we have narrow tires. The Minister of Agriculture said that we could not afford to throw them away. Now I had a narrow wagon changed to a broad one three or four years ago at a cost of $14. That is not a large sum, and one great advantage I receive is that I can get on my land earlier in the spring —perhaps a week earlier— than I could with the old narrow tire. If I had to make the change again I would have a new hind axle. I would have it made some ten inches longer than the front one, so as to have a better bearing surface. But the only way we can get farmers generally to make a change in their methods is by education. A man in our township some years ago kept on advocating the buying of a road machine. We invited the agent to bring his machine along, and gave out that a trial was to be given. They brought their own teams, and fed their own oats, bringing the oats from Hamilton, and that was not popular with our farmers. Had we to decide right off nearly every one would have been hostile on that account. But the work done by the machine gave general satisfaction, and by the time the annual election came along the machine was there to stay. A man petitioned to do away with it, and out of nearly 600 electors he could get the names of only 29. I think road machines have come to stay. After getting our road machine we arranged that the first year statute labor would be commuted to 75 cents, and last year we brought it down to 50 cents a day. I would emphasize the danger that is being threatened by the stealing of the roadway. We should see to it that our roads are widened out to the full extent of 66 feet.

Mr. Mitchell, Murray: I live in West Northumberland, and am the road commissioner appointed by the council. Our township borders upon the county of Hastings, and we adopted the system of buying the county roads from the county, abolishing tollgates, and keeping up the roads by general taxation. We tried that for a number of years, but

found that it would not work. Unknown to myself, I was appointed road overseer for the township. I had some instruction in roadbuilding in North Hastings, having been working as a sub-foreman there, so I took charge, and have had the spending of the money among those who wish to work upon the roads. This is my fourth year, and I still have the spending of the money for road construction. The first year the pathmasters appeared to be a little dissatisfied; but last year, at the municipal nominations, there were not ten men who did not appear to be satisfied to pay their statute labor, which is now only 50 cents a day. However, you must go slow, and be careful where you touch the people so far as taking the power out of their hands or out of the hands of the council. I think we have made the system a success in our township. We had three tollgates, but abolished them, and the consequence is that we are sustaining our roads cheaper than we did under the tollgate system. I believe that the councillors of each municipality are as a rule representative men; and most of them can be got to take an interest in road improvement. If you can get such men to appoint a commissioner who will take a pride in his roads, the question is largely solved. When I was appointed I got $1.40 a day for ten hours' work. This year it was increased to $1.50. I am paid by the day, and during the past year put in about six months, for which I received $237, and I have done a lot of work with the rest of the men. If you have a pathmaster he merely overlooks the work; he does not turn in and do much. The council appropriates just the amount in estimates that will cover the year's work—from $2,000 to $3,000 as may be required. This year it cost 2,300. If there is a freshet or anything of that sort, I am supposed to leave everything and get to the place as soon as possible. As regards the handling of the road funds, I bring my pay sheets with each man's time, etc., kept, and there is no chance for any one to grumble. I am employed by the day, and this year the total number makes about six months. In the winter we get out some gravel, and also prepare for bridges, etc., as well as making estimates and planning summer work generally. I engage the men myself, and put on as many as I think fit, according to the emergency of the work in hand. In the case of a pathmaster returning work which has not been properly done, we have a chance of looking it over and righting it. I talk over with the 97 pathmasters the best means, and I advise and direct them.

Mr. M. Kennedy, Mayor of Owen Sound, was introduced, and said: As head of our municipality I advised the sending of representatives to this convention. Mr. Fox, chairman of our Board of Works, and myself are therefore here to listen to what has to be said and receive what instruction we can get in improving our public highways. I was much pleased with the address of Mr. Wood last night. I never could understand how farmers could afford to go out on the road and spend their time for 50 or 75 cents a day. The only explanation at all satisfactory is that given by somebody yesterday, who said that they sent out the old mare, the two year old colt and the boy. I believe statute labor is an evil from beginning to end. It is generally done at the wrong time of the year when the roads are dry. The true principle to adopt is to appoint a proper officer to take practical charge of the roads. I think the plan of electing the road commissioners is a good one. I believe that if that official is elected and is held responsible for the expenditure he will be likely to give good satisfaction. In the county of Grey, the gravel roads, after they came into the hands of the municipal corporations, were placed in care of the reeves, and much of the money spent was absolutely wasted. I believe that if we had appointed a road commissioner, like Hastings did, we would have as good roads as there are in the province of Ontario. As a sample of the bad roads in a good country, I may mention a trip which I had occasion to make to the village of Embro, in the county of Oxford, a few years ago. I hired a rig at Beachville, and started about ten a.m., but instead of being able to make the trip in two or three hours it was dark before I got back, although it took only about three-quarters of an hour to transact my business in Embro. Having business at Welland two or three years ago, I saw a wagon there with a span of horses going to the railway station, and the roads were in such an abominable condition that the wheels were a solid disk of mud. One could not see a hub or spoke of any of the wheels. The empty wagon and driver were a full load for the horses. Is it possible that it paid

these localities to have such roads? Looking at it from a business point of view I say "no."

The PRESIDENT: There are two tollgates on that Beachville road, and there are enough stones on either side to macadamize the whole road.

Mr. RENTON, Wentworth: We have no road machine in the township of Ancaster, but at the last meeting of our county council a committee was appointed to have a test of such machines, and to purchase one for the benefit of the county roads. Two townships in our county have road machines—Saltfleet and Barton. In one of these townships they reduced their commutation to 35 cents a day, and they had double the work done for the 35 cents that they formerly got for a day's statute labor. I would like to listen to the relation of some practical experience with road machines.

Mr. KIDD, South Gower, Carleton: I am pleased to attend this meeting, and all such gatherings calculated to advance the interests of the country in general and agriculture in particular. I can look back with pleasure and encouragement to the great results which have sprung from the meetings and general work of the Dairymen's and Creameries Associations; and I believe you will also be able to look back in a few years and see the good work that this Good Roads Association has accomplished. For the last few years I have been much interested in the cheese industry, and any one engaged in that business must see a good deal of the roads. In our section we have rather bad roads, as we live in a clay country, where the mud so rolls up in the wheels that you can hardly tell whether there are any felloes or spokes in the wheel at all. I have aided the municipal officers in calling a meeting next week to decide whether they will commute statute labor or not. At first the proposal was received coolly, but I hope that some good results will follow the meeting next week.

Mr. R. L. RICHARDSON, Strathroy: I think this association is a move in the right direction. In 1870, when I went west to start in the cheese business, the roads there were bad. The cheese cost about two cents a pound for the hauling of the milk and two cents for manufacture. I have run eight cheese factories, using annually about 10,000,000 lb. of milk, and making fully 1,000,000 lb. of cheese. The cost of hauling has been, perhaps, $10,500, and if the roads had been good I believe I could have saved $5,500 of that outlay. I started in the county of Lambton, but in the spring we could not make cheese, for I could walk faster than they could drive. There was mud up to the hoops. When I spoke of coming here some of my friends said, "Why, Richardson, it is a political meeting." "Well," said I, "if it is I hope it will do as much good for the roads as the Local Government has done for the cheese industry." And I am a Conservative, too. In the old time, when statute labor was being performed, I have heard men tell stories, and send for liquor, and cut up generally. I believe that, as ordinarily practised, statute labor is a humbug. If we could get the money direct we would be able to use it to much better advantage on our roads. It now takes 700 persons to perform what 90 men could do. Some of the towns would give a bonus to assist good local roads. Twenty boxes of cheese, averaging seventy pounds to the box, is now counted a good load.

The PRESIDENT: The dairy business is annually losing about $1,000,000 on account of bad roads. For the purpose of argument I have put it at half that sum at our dairy conventions. A million dollars a year is five per cent. on $20,000,000. That is the cost of our bad roads to the dairy interests of Canada, and the dairy industry is only one of many interests.

Mr. MONTEITH: I had the good fortune to be here last year, and I went home thoroughly imbued with the idea that our roads needed improvement. I think the Minister of Agriculture yesterday struck the true key-note to the whole situation when he said that if we got public opinion aroused we would soon get better roads. Our present municipal system is a good one, if the people will only act up to it. We have a grader in our township, and all we have to do now is to haul the gravel. We get a uniform grade. If we make our roadways beautiful and keep them in good condition, it will have a tendency to keep our boys on the farm. We need greater independence of thought and

action in our municipal councils. We should elect men who are above log-rolling. The true and lawful end of political aspiration should be to help our fellow men.

Mr. Filson, Amherst Island: We have bad roads in our section, but I think that this association in a few years will be the means of improving them. We want good roads on account of our cheese factories, for we have now to draw with two wagons what one wagon should draw. I think it was a good move for the Government to send a practical man like Mr. Judd to tell us about our roads and how to better them. He seemed to know what he was talking about.

Mr. Fox, Owen Sound: The town of Owen Sound adjoins the township of Sydenham, and we keep up part of the line road. The township of Sydenham put in 130 days of statute labor, and wanted $130 from our town. That seemed small enough—$1 a day. I thought, however, that there had not been a proper amount of work done upon it. We took the township foreman and asked him to tell us what the work done by the 130 days of statute labor really represented, and he told us that it was worth only $40. The pathmaster himself admitted that the $40 expended by us did more work than the $130 worth of statute labor did. We now let our work by tender, and so do they, and there is no trouble about it at all. In another municipality they let their work out, and commute it at 75 cents a day, and they are satisfied with it. As for councillors, if a man is going to trim the whole year around he is not worthy of election. We find it pays to make good roads, because it brings farmers to our town. We have a Board of Works in Owen Sound, and we go out in the spring and examine our roadways, and see what expenditure is needed. We have lately got into what we call the permanent road system. We take a block and make a permanent road of it. In some parts of the municipality, of course, we do not do this. We lay six inches of broken stone, and then two inches of macadamizing that will go through a two-inch ring, and then sand or gravel on that, and when a wet time comes we grade it. We let all this work by contract, and have a good overseer to look after it.

Mr. Wooley: There are two important matters in improving earth roads: The first is a road machine, and the second is the adoption of wide tires.

Mr. A. H. Pettit: I would like to put some of the gentlemen right in regard to the county of Oxford—our president's county. I was there a short time ago, and the roads there were in a much better condition than has been reported. We are going to push this matter of better roads; as taxpayers we must. I hope that when your convention is over and these resolutions are published, you will send them out to the taxpayers and say: "After you have read these, please stir up your councillors and ask their co-operation." In my visits to the farmers' institutes I had with me a gentleman from your association, and he handled his subject with great ability, and in the best interests of the public. The trouble with some men who advocate good roads is that they have too great a desire to exalt some particular system. When you come with such simple and practical plans as you have had put before you the past few days, you will find that the public will gradually see the benefit, and be willing to avail themselves of the advantages to be gained therefrom.

Mr. Murray Pettit, President of the Ontario Fruit Growers' Association, was introduced, and said: The fruit growers of the country are interested in good roads. It is hard to carry the tender fruits without destroying them unless we have good roads, and we now have to hurry our apples along before the roads are soft or else carry light loads. I think also that something should be said about cleaning up and beautifying our country roads, and regarding the planting of trees along the roadside in order to break the wind. As to road commissioners, I may say that in our own township we passed a by-law commuting statute labor, and appointed two commissioners. Road machines were purchased, and a certain amount of money has been set aside for the work of road improvement. They go on and expend that and bring in a detailed statement of their expenses to the council. The only control the council has over the commissioners is to see that they do not exceed the amount drawn under the by-law. We have one clay road

—a county line—worked by two municipalities. One side of the road was worked by our machine, and the other by the old system of dumping earth, and one gentleman said that it looked like a pig with one ear.

Mr. R. W. Parker: The great trouble with the present system of statute labor is dealing with the fellows who have no backbone. The ratepayers are to blame for placing men in office in our municipalities who are disposed to wire-pulling, and who will appoint men as pathmasters who will spend their time going up and down speaking well for some particular man. One machine is not enough to do the work for the whole township. The machine makes a fine, uniform grade, and the statute labor can be employed to good advantage after the road machine has done its work. I think that any councillor should be fit to make a good road commissioner.

Mr. J. C. Dance: I do not think it is desirable to have too great a change in the system of road work, but we should keep educating the public as far as possible along proper lines. We should also have experienced persons to carry out the law.

Mr. Beam: Some of my friends think I am against broad tires. I took some ground at the Central Farmers' Institute meeting about compelling people to change to broad tires, but I am in favor of broad tires, although I do not think the change should be made compulsory.

Mr. J. C. Brokovski, Craighurst: In reference to a partial system of commutation of statute labor and the road commissioner plan, I find that it is very difficult sometimes to impress upon the people the advantages of commutation. But if they could be persuaded that there could be a plan of part working by statute labor and part by the road machine, I think they would find it a good policy and adopt it.

Information Wanted

"Resolved that we petition the Honorable Minister of Agriculture to secure, through the agency of the Bureau of Industries, complete and accurate information as to the amount of statute labor on the rolls of every municipality of the province during the past ten years; the amount of such labor actually done and the amount which those who ought to have done it have failed to do; also the value of such labor, based on the estimates of municipal officers and representatives who are best able to judge; and the amount expended in money in municipalities in addition to statute labor in the building and maintenance of public highways, such amount to be exclusive of the building of bridges over running streams. We would also suggest that as complete information as possible, be collected by the same agency, as to the extent and character of public roads in each municipality and the distribution of road-making material."—Adopted.

Special Committee

"Resolved, that a special committee of this association, consisting of His Honor Judge Woods, of Chatham, Messrs. A. P. Macdougall, A. W. Campbell and the president and secretary of this association be requested to draft legislation which will carry the principles of our drainage laws into the work of road-building, and enable municipalities or sections of them to build and maintain permanent highways for themselves when they desire to do so, the money for which shall be raised through the issue of municipal debentures, to be repaid by taxation on the municipalities or sections affected. The said committee to petition the Ontario Legislature to pass such legislation as it may agree upon in this direction."—Adopted.

The President: I may say that this resolution has largely in view the needs of such marshy or low lying districts as the country around Chatham. Judge Woods says: "It is all very well for you to talk about good roads in your locality, but come over here and live for a while. We are absolutely shut up for two or three months of the year, and we want legislation that will enable us to drain our lands at a reasonable cost." If

twenty farmers want to put a macadamized road along their farms on the frontage tax principle, there ought to be some means to enable them to do so, if they are willing to be taxed for it.

The following resolutions were then adopted :

Moved by J. F. BEAM, seconded by JAMES SHEPPARD :

"That members of this association should use their influence towards forming local county and township Good Roads Associations and aid the road reform movement, and that they are requested to take such action on their own account."

Moved by JAMES SHEPPARD, seconded by P. MAHON :

"That the thanks of this meeting be tendered to Mr. A. H. Pettit, secretary of the Central Farmers' Institute, for his attendance, thereby enabling the delegates to take advantage of special railway rates when they were in a position to do so."

Moved by WM. MUNRO, seconded by JAS. BEATTIE :

"That a committee consisting of the president, A. F. Wood and Mr. P. Mahon, are hereby appointed to petition the Ontario Government and Legislature for a grant toward the necessary working expenses of this association, and in event of any member of the committee being unable to act, the executive be empowered to appoint a substitute."

The PRESIDENT : I think the Government might grant us some small amount—say $400 or $500.

All matters pertaining to legislation were referred to the Executive Committee, and after passing a hearty vote of thanks to the president and other officers, a most successful meeting was adjourned *sine die*.

TOWNSHIP DISBURSEMENTS ON ROADS AND BRIDGES.

The following table gives details of returns received from Township municipalities in Ontario, showing for 1893 the number of days of Statute Labor, the Disbursements on Roads and Bridges and the Road mileage.

Township municipalities.	No. of days statute labor.	Roads and bridges expenditure, 1893.	Road mileage.
		$	
BRANT:			
Brantford	5,746	2,904	.....
Burford	4,587	3,400	170
Dumfries, S	3,462	2,354	108
Oakland	1,100	171	28
Onondaga	1,384	1,404	71
BRUCE:			
Albemarle	1,332	695	.....
Amabel	.....	1,249	.....
Arran	2,710	2,915	164
Brant	3,646	2,298	.....
Bruce	.....	2,861	.....
Carrick	943	2,200	180
Culross	2,300	2,000	100
Eastnor	.....	967	89
Lindsay, etc	613	539	.....
Elderslie	2,175	2,420	120
Greenock	5,000	2,633	150
Huron	3,573	3,746	144
Kincardine	3,798	2,600	136
Kinloss	2,367	2,076	136
Saugeen	833	2,611	120
CARLETON:			
Fitzroy	1,901	1,803	120
Gloucester	4,000	1,910	500
Goulburn	2,518	645	.....
Gower, N	1,595	990	80
Huntley	1,123	746	.....
March	750	300	100
Marlborough	1,710	200	.....
Nepean	.....	2,356	.....
Osgoode	4,412	700	245
Torbolton	853	146	108
DUFFERIN:			
Amaranth	2,769	1,113	185
Garafraxa, E	.....	723	.....
Luther, E	1,751	1,525	247
Melancthon	3,372	2,170	.....
Mono	3,254	2,730	231
Mulmur	3,564	1,384	.....
ELGIN:			
Aldborough	4,768	4,065	.....
Bayham	.....	3,042	.....
Dorchester, S	1,904	3,275	85
Dunwich	.....	3,722	.....
Malahide	4,853	6,461	150
Southwold	4,794	5,837	220
Yarmouth	5,331	6,249	180
ESSEX:			
Anderdon	2,250	2,048	.....
Colchester, N	3,044	1,406	150
Colchester, S	3,575	2,029	66
Gosfield, N	2,174	588	100
Gosfield, S	.....	1,804	70
Maidstone	2,602	1,790	.....
Malden	.....	3,190	75
Mersea	.....	3,317	.....
ESSEX.—*Continued:*			
Pelee Island	1,360	150	.....
Rochester	1,887	2,485	.....
Sandwich, E	.....	1,460	.....
Sandwich, S	2,395	812	.....
Sandwich, W	.....	2,134	.....
Tilbury, N	1,150	1,200	60
Tilbury, W	1,310	.....	.....
FRONTENAC:			
Barrie	286	29	.....
Bedford	.....	1,294	.....
Clarendon, etc	634	50	80
Hinchinbrook	1,278	907	113
Howe Island	250	100	24
Kennebec	745	200	90
Kingston	3,158	258	.....
Loughborough	1,877	940	.....
Olden	873	371	.....
Oso	668	200	.....
Palmerston, etc	640	78	84
Pittsburg	2,567	1,692	.....
Portland	2,268	1,543	250
Storrington	1,868	450	.....
Wolfe Island	.....	412	.....
GREY:			
Artemesia	.....	2,627	.....
Bentinck	.....	1,891	.....
Collingwood	5,583	4,000	225
Derby	2,207	2,613	91
Egremont	4,040	591	90
Euphrasia	3,209	1,100	200
Glenelg	3,496	1,662	160
Holland	.....	1,244	.....
Keppel	2,924	2,210	230
Normanby	3,420	2,249	241
Osprey	3,256	1,195	.....
Proton	3,941	2,000	240
St. Vincent	3,166	1,605	.....
Sarawak	1,362	1,396	66
Sullivan	3,246	1,949	150
Sydenham	4,014	2,582	118
HALDIMAND:			
Canborough	.....	1,032	.....
Cayuga, N	2,002	684	80
Cayuga, S	694	81	46
Dunn	929	189	40
Moulton	1,957	394	100
Oneida	1,854	626	.....
Rainham	1,700	527	.....
Seneca	2,100	987	110
Sherbrooke	424	28	15
Walpole	3,890	1,437	167
HALTON:			
Esquesing	.....	1,571	.....
Nassagaweya	1,860	1,676	120
Nelson	3,565	1,175	.....
Trafalgar	3,801	5,345	.....

NOTE.—This table contains many returns received since statement was compiled by the Secretary, but it is still very incomplete. (See page 66).

TOWNSHIP DISBURSEMENTS ON ROADS AND BRIDGES.—*Continued.*

Township municipalities.	No. of days statute labor.	Roads and bridges expenditure, 1893.	Road mileage.
		$	
HASTINGS:			
Bangor, etc	351	250	
Carlow	346	233	
Mayo	262	243	
Dungannon	441	253	110
Elzevir	783	690	100
Faraday	638	480	85
Hungerford	3,487	1,300	250
Huntingdon	2,403	248	90
Limerick	373	570	45
Madoc	600	350	
Marmora and Lake	1,621	1,300	
Monteagle and H	783	300	
Rawdon	3,516	711	150
Sidney	1,500	575	
Thurlow	4,923	723	130
Tudor and Cashel	513	528	
Tyendinaga	4,150	1,145	
Wollaston	442	260	
HURON:			
Ashfield	3,400	4,037	250
Colborne	2,012	1,465	
Goderich		3,131	
Grey	3,200	3,152	140
Hay		3,343	125
Howick	4,244	1,112	175
Hullett	3,011	3,035	140
McKillop	3,951	2,774	120
Morris	3,189	3,355	145
Stanley	1,725	1,965	
Stephen	5,000	3,507	
Tuckersmith	2,857	2,166	167
Turnberry	2,298	777	90
Usborne	2,450	2,507	115
Wawanosh, E	1,777	1,515	100
Wawanosh, W		1,675	
KENT:			
Camden		1,751	
Chatham		3,207	
Dover	2,531	908	
Harwich	5,240	4,124	
Howard	2,508	2,400	241
Orford		1,758	
Raleigh	5,342	2,281	200
Romney	3,401	1,000	96
Tilbury, E	2,782	1,709	175
Zone		558	
LAMBTON:			
Bosanquet	3,224	4,005	100
Brooke	2,960	3,532	200
Dawn	3,407	1,402	210
Enniskillen	540		
Euphemia	2,164	988	100
Moore	5,560	5,311	170
Plympton	3,692	5,300	220
Sarnia	364	2,272	
Sombra	3,986	3,150	222
Warwick	2,500	1,000	150
LANARK:			
Bathurst	2,550	2,000	152
Beckwith		1,067	
Burgess, N		107	
Dalhousie, etc	1,710	997	300

Township municipalities.	No. of days statute labor.	Roads and bridges expenditure, 1893.	Road mileage.
		$	
LANARK.—*Continued*:			
Darling	590	85	
Drummond	1,617	700	150
Elmsley, N	900	650	60
Lanark	1,555	514	
Lavant	625	113	
Montague		246	
Pakenham		996	
Ramsay	1,250	1,235	250
Sherbrooke, S	740	163	
LEEDS AND GRENVILLE:			
Bastard and B	3,138	195	250
Crosby, N	1,229	564	
Crosby, S	2,051	132	
Elizabethtown	4,620	2,527	
Elmsley, S	440	416	
Kitley	1,347	736	200
Leeds and L. Fr	1,500	2,802	100
Leeds and L., Rr	2,149	843	
Yonge & Escott Fr.	2,465	751	
Yonge & Escott Rr.	1,444	81	
Augusta	3,898	2,097	
Edwardsburg	4,124	1,852	250
Gower, S	1,354	347	
Oxford on Rideau	3,862	1,412	140
Wolford		380	
LENNOX & ADDINGTON:			
Adolphustown	700	50	20
Amherst Island	1,000	235	
Camden, E	4,130	2,187	
Denbigh, etc	565	400	160
Ernestown		2,310	
Fredericksburg, N	882	654	
Fredericksburg, S	1,075	663	
Kaladar, etc	758	146	106
Richmond		1,220	
Sheffield	3,000	534	
LINCOLN:			
Caistor	1,874	1,322	
Clinton	2,200	1,293	100
Gainsborough	3,000	1,465	130
Grantham	3,000	1,300	
Grimsby, N	1,738	1,678	
Grimsby, S	1,432	991	80
Louth	2,100	1,567	100
Niagara	1,922	1,893	150
MIDDLESEX:			
Adelaide	4,500	2,860	160
Biddulph	2,851	3,700	100
Caradoc	3,587	4,912	200
Delaware	987	1,782	
Dorchester, N	3,858	3,971	
Ekfrid	2,393	4,875	150
Lobo	2,899	4,917	
London	9,000	11,431	350
McGillivray		5,221	100
Metcalfe		2,933	
Mosa		2,097	
Nissouri, W	2,970	4,098	114
Westminster	4,000	5,360	125
Williams, E	3,200	2,991	150
Williams, W	1,948	1,725	

TOWNSHIP DISBURSEMENTS ON ROADS AND BRIDGES.—*Continued.*

Township municipalities.	No. of days statute labor.	Roads and bridges expenditure, 1893.	Road mileage.	Township municipalities.	No. of days statute labor.	Roads and bridges expenditure, 1893.	Road mileage.
		$				$	
NORFOLK:				PERTH.—*Continued:*			
Charlotteville	3,113	960	.....	Elma	3,539	3,227	135
Houghton	1,755	1,079	.....	Fullarton	2,325	4,837	.....
Middleton	3,069	2,722	.....	Hibbert	2,373	2,470	.....
Townsend	4,549	1,100	200	Logan	2,989	2,541	157
Walsingham, N	2,264	1,421	.....	Mornington	2,873	2,989	132
Walsingham, S	2,457	1,056	.....	Wallace	2,890	882	128
Windham	4,163	1,787	220	PETERBOROUGH:			
Woodhouse	.....	687	.....	Asphodel	1,556	2,071	100
NORTHUMBERLAND AND DURHAM:				Belmont and M	1,308	200	.....
Alnwick	788	734	90	Burleigh, A. & Ch	412	400	100
Brighton	.....	1,119	.....	Douro	2,235	1,150	140
Cramahe	3,100	1,003	180	Dummer	1,592	500	375
Haldimand	4,877	2,565	300	Ennismore	951	697	35
Hamilton	4,998	2,000	300	Galway & Cavendish	410	136	80
Monaghan, S	1,110	470	100	Harvey	888	350	200
Murray	.....	1,392	.....	Monaghan, N	1,147	560	50
Percy	3,200	2,160	150	Otonabee	3,063	2,406	200
Seymour	2,747	4,363	.....	Smith	2,936	1,377	.....
Cartwright	1,380	600	98	PRESCOTT & RUSSELL:			
Cavan	2,600	2,562	189	Alfred	1,586	1,141	110
Clarke	3,990	1,449	300	Caledonia	1,475	632	.....
Darlington	4,220	2,633	270	Hawkesbury, E	2,997	591	105
Hope	4,198	1,371	225	Hawkesbury, W	2,124	369	45
Manvers	3,616	1,656	160	Longueuil	.....	124	.....
ONTARIO:				Plantagenet, N	2,070	1,405	.....
Brock	3,534	2,755	.....	Plantagenet, S	2,324	1,300	138
Mara	3,388	2,851	181	Cambridge	2,440	1,007	.....
Pickering	10,040	4,301	277	Clarence	2,603	1,650	150
Rama	1,140	446	100	Cumberland	2,839	1,500	200
Reach	4,238	1,560	180	Russell	2,861	2,730	200
Scott	1,988	1,905	125	PRINCE EDWARD:			
Scugog	576	105	27	Ameliasburg	.....	451	.....
Thorah	1,590	1,664	84	Athol	2,226	184	85
Uxbridge	2,905	1,143	134	Hallowell	4,208	460	.....
Whitby, E	3,518	1,792	.....	Hillier	2,800	375	.....
Whitby	.....	1,296	.....	Marysburg, N	924	368	75
OXFORD:				Marysburg, S	1,743	104	90
Blandford	2,361	638	.....	Sophiasburg	3,124	344	.....
Blenheim	5,985	4,182	175	RENFREW:			
Dereham	4,116	3,505	120	Admaston	1,680	250	80
Nissouri, E	3,400	2,013	150	Algona, S	336	58	.....
Norwich, N	6,067	1,662	.....	Alice and Fraser	916	152	126
Norwich, S	3,435	1,500	80	Bagot and B	570	440	100
Oxford, E	2,487	1,200	.....	Bromley	.....	346	.....
Oxford, N	1,616	1,030	.....	Brougham	.....	22	.....
Oxford, W	1,978	1,253	111	Brudenell and L	634	141	.....
Zorra, E	4,687	3,187	184	Grattan	703	592	.....
Zorra, W	.....	4,566	.....	Griffith and M	300	97	.....
PEEL:				Hagarty, etc	887	505	.....
Albion	2,570	1,706	187	Head, Maria, etc	241	4	35
Caledon	4,274	1,700	200	Horton	1,039	451	.....
Chinguacousy	4,055	3,016	240	McNab	2,311	1,022	.....
Toronto	5,000	7,157	250	Pembroke	559	29	.....
Toronto Gore	925	806	.....	Petawawa	.....	213	70
PERTH:				Radcliffe and R	467	62	.....
Blanshard	.....	4,538	.....	Rolph, B. and W	538	560	.....
Downie	3,600	4,950	150	Ross	.....	959	.....
Easthope, N	3,000	2,541	110	Sebastopol	415	20	54
Easthope, S	2,005	1,715	65	Stafford	284	105	60
Ellice	3,315	3,528	120	Westmeath	.....	.....	.....
				Wilberforce and A	1,056	374	50

TOWNSHIP DISBURSEMENTS ON ROADS AND BRIDGES.—*Concluded.*

Township municipalities.	No. of days statute labor.	Roads and bridges expenditure, 1893.	Road mileage.
		$	
SIMCOE:			
Adjala	2,011	1,043	135
Essa	.....	3,000	177
Flos	3,434	1,070	224
Gwillimbury, W.	2,600	820	100
Innisfil	4,900	1,532	241
Matchedash	270	430	70
Medonte	3,126	1,551	.....
Nottawasaga	9,963	2,000	125
Orillia	.....	2,075	.....
Oro	3,797	1,873	225
Sunnidale	2,550	1,614	.....
Tay	2,942	1,850	.....
Tecumseth	3,556	2,633	.....
Tiny	3,694	940	95
Tossorontio	1,365	531	90
Vespra	2,388	1,858	.....
STORMONT, DUNDAS AND GLENGARRY:			
Cornwall	5,600	1,986	.....
Finch	3,146	2,243	.....
Osnabruck	5,591	1,225	.....
Roxborough	3,600	1,371	.....
Matilda	5,657	2,577	.....
Mountain	3,590	1,688	.....
Williamsburg	4,944	1,056	.....
Winchester	4,603	2,471	.....
Charlottenburg	5,182	7,365	.....
Kenyon	4,073	2,925	.....
Lancaster	.....	1,480	.....
Lochiel	3,497	1,215	.....
VICTORIA:			
Bexley	819	321	.....
Carden	609	193	.....
Dalton	120	223	.....
Eldon	630	1,324	165
Emily	2,382	1,738	.....
Fenelon	2,327	480	1,200
Laxton, D. and L.	564	55	.....
Mariposa	785	1,306	205
Ops	2,905	3,400	172
Somerville	1,522	645	120
Verulam	.....	1,532	.....
WATERLOO:			
Dumfries, N.	2,862	888	125
Waterloo	7,250	6,300	250
WATERLOO.—*Continued:*			
Wellesley	5,849	4,228	.....
Wilmot	5,387	2,754	.....
Woolwich	4,275	1,880	.....
WELLAND:			
Bertie	6,000	1,677	.....
Crowland	1,900	250	160
Humberstone	.....	545	.....
Pelham	3,000	726	150
Stamford	3,072	758	100
Thorold	2,460	878	100
Wainfleet	2,908	1,274	.....
Willoughby	1,125	978	90
WELLINGTON:			
Arthur	2,993	1,486	163
Eramosa	2,646	1,969	140
Erin	3,274	1,480	220
Garafraxa, W.	2,819	2,247	.....
Guelph	1,950	1,641	.....
Luther, W.	2,890	1,146	119
Maryborough	.....	2,934	.....
Minto	3,272	2,173	195
Nichol	2,000	1,100	110
Peel	4,500	3,868	168
Pilkington	1,943	928	70
Puslinch	4,000	1,424	.....
WENTWORTH:			
Ancaster	3,347	1,200	.....
Barton	2,049	683	.....
Beverly	4,000	1,790	190
Binbrook	1,800	585	80
Flamboro', E.	2,239	1,567	59
Flamboro', W	2,069	956	65
Glanford	1,451	834	.....
Saltfleet	.....	1,456	.....
YORK:			
Etobicoke	3,285	3,851	150
Georgina	2,240	450	60
Gwillimbury, E.	3,988	1,740	136
Gwillimbury, N	3,193	458	.....
King	4,412	5,400	207
Markham	.....	2,984	.....
Scarborough	1,965	3,354	194
Vaughan	.....	4,532	.....
Whitchurch	3,551	1,500	150
York	5,865	2,983	155

ROAD-MAKING.

(This was issued by the Ontario Department of Agriculture as a special bulletin and distributed among the pathmasters of the Province.)

PREPARED BY THE ONTARIO GOOD ROADS ASSOCIATION.

REQUISITES FOR PERMANENCY. In order to make and maintain a permanent roadway, two rules must be followed :

1. Take the water out.

2. Keep the water out.

UNDERDRAINING. Where a road is to be constructed on a wet and retentive soil, a perfect system of underdraining must be provided. This is best done by cutting ditches diagonally across the roadbed with discharge into side ditches. These diagonal ditches should have a good fall and good outlet and should be from eighteen inches to two feet deep and about one foot wide at the bottom, with a slight slope outward. In these should be laid coarse, broken stone, broken bricks or other material suitable to form a drain, filling them up to the level of the sub-grade.

SURFACE DRAINING. Open ditches should be cut on each side of the roadbed at a distance of about twelve feet from the outsides of the metalling. They should be deep enough to drain the foundation ; at least eighteen inches below the sub-grade.

TILE PREFERABLE. Where tile is cheap and a good outlet obtainable, tile side drains are preferable to open ditches. Shallow gutters should be made over the tiles to catch the surface water and conduct it to catch-basins placed at convenient distances apart. The catch-basins should be made of durable materials of sufficient size to be freely cleaned and should be covered with iron gratings. The basins should extend at least two feet below the bottom of the tile to provide space for the deposit and they should be cleaned at least twice a year.

THE ROADSIDES. The strips of ground between the metalled road and the open ditch should be properly graded to conform with the crown and grade of the metalling and should be seeded and kept in sod. This will always be pleasing to the eye, is cheap and very largely useful in preventing the carrying of mud on to the metalling. Moreover, the uniformity of the grade facilitates the passing of meeting teams.

LOCATION OF SUB-DRAINS. In a soil that is gravelly and pervious to water, the open ditches on each side of the road, even of a 66-feet wide road, are sufficient for draining the roadbed. If there be any springs under the road, a sub-drain leading directly to the side ditch will be required. Should the road be on a side hill a deep open ditch on its upper side, to arrest the flow from the adjacent land, may be sufficient, the water being at intervals conducted across and under the road by an ordinary stone culvert.

OUTLETS. Mistakes are often made by giving insufficient outfalls to the drains. Under the Ditches and Watercourses Act a municipality has the same power as an individual to enforce the natural outlet for the drainage water of the land. But municipal officers are apt to shrink from forcing an outlet through private lands, and to leave their road drains with insufficient outlets rather than incur the ill-will of possibly influential constituents. This should not be so. Municipalities should insist upon their rights, and the owners of lands interfered with should pay the same proportion of the cost of the work as if only private individuals were concerned.

BAD DRAINAGE AND FROST. Imperfect drainage is the cause of the badness of our roads in nearly all cases. The inexperienced are not apt to appreciate the paramount necessity for the maintenance of a perfectly dry foundation of earth for their surface of broken stone, gravel, etc., to lie upon. A protracted rain will soften an undrained road and on the passing of a heavy load injurious ruts are the consequence. In these latitudes the soil water freezes and the consequent expansions and contractions quickly ruin a roadbed.

Destructiveness of Ruts. It matters not whether a road be earth or macadam if attention is not given to the preservation of the finished crown. If ruts are allowed to form water is admitted. Every depression is a centre of destruction. The power of resistance to the water becomes less and less until the roadway becomes actually impassable.

Road Machines. In constructing earth roads a plow should not be used except where actually necessary, because a plowed surface is only with great difficulty made hard and smooth, and the plow is likely to cut too deeply into the earth. A good road machine should be procured if possible, for by the use of a machine the natural foundation of the ground is not disturbed in rounding up the road as is done with common plows and scrapers. Every municipality should own a road machine and should have a man especially instructed and constantly in charge of it. With a road machine in skilled hands, there will be no question raised as to the economy of construction and repairs and the efficiency of the work done.

Width of Roadway. The roadway should be twenty-six feet between the ditches, and the metalling for ordinary roads eight feet wide; where more than a single line of travel is required the metalling should be sixteen feet wide.

Height of Crown. A roadway of this width should have a crown of at least ten inches and should always be maintained in this shape.

Rolling. After the road machine has completed its work, the whole grade should be rolled with a roller weighing about five tons. Rolling is essential in making the foundation and surfacing to form permanent or gravel roads. The roller should follow closely upon the grader or scraper so that the loose earth may be consolidated while it is still moist. The roller should pass many times over the softer portions of the road, and where the road is very dry and not inclined to pack, it may be slightly moistened to facilitate the consolidation of the earth. The rolling should begin at the sides of the road and proceed gradually towards the centre; that is, the roller should be passed from end to end along the side of the road and then in the second passage the roller should slightly lap the first passage until the centre of the road is reached.

Metalling. After the formation of the road and the draining are completed, the mass of broken stone or gravel which is to form its wearing surface should be laid, packed and so consolidated that it will be practically water-tight. Such a road will be durable and easily maintained. It will shed water readily. Its hardness will prevent the formation of ruts, which is the first stage of destruction.

Width of Tires. If all wagons used in country roads could be provided with tires four inches wide, they would roll the surface more smoothly and more quickly, and the road would be in fairly good condition all the year round.

Noxious Weeds. Chapter 202, R.S.O., 1887.

(Sec. 9.) "It shall be the duty of the overseers of highways in any municipality to see that the provisions of this Act relating to Noxious Weeds are carried out within their respective highway divisions by cutting down or destroying or causing to be cut down or destroyed at the proper times, to prevent the ripening of their seed, all the noxious weeds growing on the highways or road allowances within their respective divisions, such works to be performed as part of the ordinary statute labor, or to be paid for at a reasonable rate by the treasurer of the municipality, as the council of the municipality may direct."

(Sec. 10, sub-sec. 4.) "Every overseer of highways who refuses or neglects to discharge the duties imposed upon him by this Act shall, upon conviction, be liable to a fine of not less than $10 or more than $20."

Noxious weeds include Canada Thistles, Ox-eye Daisy, Wild Oats, Ragweed and Burdock.

(No. 60).

Report of the Niagara Falls Park and River Railway Company for the year 1894. Presented to the Legislature, 22nd March, 1895. (*Not printed*).

(No. 61).

Return to an Order of the House of the eleventh day of March, 1895, for a Return of copies of all correspondence relating to the appointment of Alfred Knight as Clerk of the First Division Court of the Counties of Lennox and Addington. Presented to the Legislature, 22nd March, 1895. Mr. *McLaren*. (*Not printed*).

COPY

Of an agreement between the Inspector of Prisons and Public Charities and Messrs. H. A. Nelson & Sons, relative to the manufacture of brooms at the Central Prison. Also, of an Order in Council approved by His Honor the Lieutenant-Governor the Eighteenth day of August, A.D. 1894, authorizing the Inspector to execute the said agreement.

By Command,

(Sgd.) J. M. GIBSON,
Secretary.

Office of the Provincial Secretary,
Toronto, February 26th, 1895.

COPY OF AGREEMENT *Re* CENTRAL PRISON.

THIS AGREEMENT made in duplicate the first day of August, in the year of our Lord one thousand eight hundred and ninety-four,

BETWEEN

The Inspector of Prisons and Public Charities, hereafter called the Inspector, acting for, and on behalf of, Her Majesty, and by virtue of the thirty-eighth section of the Revised Statutes respecting the Central Prison, of the First Part,

AND

Albert Daniel Nelson, Horatio William Nelson, Charles Henry Nelson and Frederick E Nelson, trading under the style and firm of H. A. Nelson and Sons, of the Second Part.

The Inspector, subject to the performance of the agreement hereinafter contained to be performed by the parties of the second part, agrees to manufacture at the Industries of the Central Prison of Ontario brooms and whisks for the parties of the second part, at the average rate during the month of 130 dozens each working day, at the rate of twenty-five cents per dozen for brooms and eighteen cents per dozen for whisks, to be paid therefor; the brooms to be the same kind as those now manufactured by Messrs. H. A. Nelson and Sons, viz., Rose, Pansy, Thistle, Maple Leaf A, Maple Leaf B, Shamrock A, Shamrock B, Daisy A, Daisy B, Tulip, Leader, O.K, and Ship, or such other styles as the trade may require and as the Inspector may agree upon; and the whisks to be of the ordinary make and style manufactured by Messrs. H A. Nelson and Sons, and such brooms and whisks to be of as good workmanship as those now manufactured at the Central Prison.

The brooms and whisks manufactured to be classified according to the labor on them under three general grades, and to be manufactured in the proportions as follows: about one-fourth of the grade of the highest cost for labor, one-fourth of the grade next in cost for labor, and one-half of the grade of the lowest cost for labor. The said price to include the unloading and handling for storage of all corn, handles and other materials used in the manufacture of the said brooms and whisks, and the packing for shipping, for the loading on the cars in the yard of the said brooms and whisks, provided that nothing herein contained shall be construed as giving the parties of the second part greater room for storage than they now enjoy.

The said parties of the second part hereby agree to provide and deliver to the Central Prison Broom Shop at the said Industries an ample supply of broom corn, wire, handles and other materials requisite for the manufacture of the said brooms and whisks, so that the prisoners or machinery may not be detained or kept idle for lack of material to be worked up or in manufacturing the said quantity of brooms and whisks, or such further quantity of broom or whisks as the said parties of the second part may require and the Inspector may agree to manufacture for them, and in the case of any deficiency of

materials as aforesaid the Inspector shall be at liberty to provide the same and to charge as the price thereof an advance of ten per centum on the cost of the same when delivered on the premises.

The parties of the second part agree to provide at all times, at their own cost, two competent instructors to instruct and supervise the prisoners in the manufacture of the said brooms and whisks, and to receive the raw material, take charge of the same and to deliver it out to the workshops. The parties of the second part agree to take away the goods weekly or oftener, so that the same shall not accumulate upon the Central Prison premises, but the retaining upon the said premises properly stored of brooms and whisks to the extent of three carloads for the purpose of shipping the same direct shall not be deemed an infringement of this provision.

The account for any work done for any month to be rendered on the first day of the succeeding month, or so soon thereafter as conveniently may be, and the same shall be paid on the twenty fifth day of such month to the Bursar of the Central Prison.

In case any amount owing under this agreement is not paid at maturity, the parties of the second part shall pay to the said Bursar current bank rate of interest while the same is in default, and in case any amount exceeding the sum of $500 remains in default for a period of thirty days, the Inspector may, if he thinks fit, notify the parties of the second part or their assigns in writing, that he will no longer, or that he will no longer after a date stated in such notice manufacture for them, and from such time or date, as the case may be, the Inspecter may be relieved from all obligations to manufacture or deliver any further goods for or to the said parties of the second part, and shall be entitled to recover the sum of $5,000.00 as and for liquidated damages for the loss and inconvenience occasioned in consequence of the changes in the prison arrangements which will be necessitated by the failure of the parties of the second part to carry out their agreement.

It is further understood as a condition of this agreement that the Government shall by an Order in Council, agree so long as this agreement or any renewal thereof subsists, not to engage in the manufacture of brooms or whisks in any institution under their control other than the Central Prison, and in such Institution for the parties of the second part only.

In case the parties of the second part shall desire to have the number of brooms and whisks to be manufactured hereinunder increased to any number not exceeding 300 dozen per day, and shall give ten days' notice in writing to the Inspector of such wish, then the said Inspector shall thereafter manufacture for and deliver to the said parties of the second part such increased number if having regard to the requirements of the other prison industries the amount of available prison labor will admit thereof, and if not, then as large a number as such prison labor can manufacture, and the said parties of the second part shall receive and pay therefor in accordance with the rates and at the times hereinbefore provided for as to the said (130) dozen, and shall duly supply material therefor.

The parties of the second part are to have for the storage of materials to be manufactured, or goods manufactured, all the lower flat or first floor above the basement of the present broom shop building.

In the event of the shop machinery or appliances used in the Central Prison premises for the manufacture of the goods proposed to be manufactured under this contract being destroyed or materially injured by fire, so as to prevent the Government from continuing such manufacture, this contract shall, except so far as it makes provision in respect of goods then delivered or ready for delivery, be at an end, provided that in case the Government should decide to rebuild or replace such shop machinery and appliances for the purpose of continuing the manufacture of brooms and whisks, the parties of the second part shall have a right to a renewal of the said contract for the residue of the above time, upon the terms and conditions above stated, either for the quantity of brooms and whisks hereinbefore provided for or for such lesser quantity as the Government shall decide to have manufactured.

This agreement shall, subject to the hereinbefore contained provisions as to default, be in force from the first day of August, A.D. 1894, to the first day of August, A.D. 1899; but it is expressly agreed that unless the same is ratified by resolution of the Legislative Assembly of the Province, at its next Session, it and everything therein contained shall be void and of no effect.

In witness whereof the said Inspector and the said firm have signed this agreement, and the said Inspector has affixed his Corporate Seal, executed in the presence of,

(Signed) JAMES NOXON,
(Signed) H. A. NELSON & SONS.

Witness :
(Signed) ERNEST PATTERSON.

Copy of an Order in Council approved by His Honor the Lieutenant-Governor the 18th day of August, A.D. 1894.

Upon consideration of the report of Mr. Inspector Noxon, dated 15th August, 1894, and upon the recommendation of the Honorable the Provincial Secretary, the Committee of Council advise that a new contract, in accordance with the terms of the draft agreement attached to the said Inspector's report, be entered into between the Inspector of Prisons and Public Charities and Messrs. H. A. Nelson & Sons for the manufacture of brooms and whisks at the Central Prison; and that the Inspector of Prisons and Public Charities be authorized to execute the said agreement in pursuance of the statute in that behalf, the same being by the terms thereof subject to ratification by the Legislative Assembly during its next Session.

Certified,

(Sgd.) J. LONSDALE. CAPREOL,
Asst. Clerk, Executive Council.

The Honorable,
The Provincial Secretary.

(No. 63).

Return to an Order of the House, of the eighth day of March, 1895, for a Return, shewing the number of registrations in each Municipality in the County of Hastings. The number of registrations during the last ten years in the Riding of North Hastings, in the different Municipalities, together with the registrations during the last ten years in the Township of Hungerford. The registration fees during the year 1894 in the Riding of North Hastings and the Township of Hungerford. Presented to the Legislature, 25th March, 1895. Mr. *Haggerty.* (*Not printed*).

(No. 64).

Return to an Address to His Honour the Lieutenant-Governor, of the fifteenth day of March, 1895, praying that he will cause to be laid before this House copies of all correspondence in the possession of the Department of the Attorney-General of Ontario in reference to warrants issued in one Province and to be endorsed in another. Also, copies of all letters and documents relating to warrants issued in Montreal and endorsed in Ottawa. Presented to the Legislature, 25th March, 1895. Mr. *Evanturel.* (*Not printed*).

(No. 65).

Return to an Order of the House of the eighteenth day of March, 1895, for a Return shewing the cost of the Diamond Drill; the date when operations were begun with it, and the number of days it has been in operation; the hours of the day it is worked; a statement of the work done and where carried on since its purchase, and the number of men employed in its use and the rate of wages at which they are engaged. Presented to the Legislature, 28th March, 1895. Mr. *Farwell*. (*Not printed*).

(No. 66).

Regulations of the Department of Education respecting grants to Schools in New and Poor Townships. Presented to the Legislature, 2nd April, 1895. (*Not printed*).

FIRST ANNUAL REPORT

OF THE

FRUIT EXPERIMENT STATIONS

OF

ONTARIO,

UNDER THE JOINT CONTROL OF THE

ONTARIO AGRICULTURAL COLLEGE, GUELPH,

AND THE

FRUIT GROWERS' ASSOCIATION OF ONTARIO.

1894.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO.)

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO
WARWICK BROS. & RUTTER, PRINTERS, &c., 68 & 70 FRONT STREET WEST
1895.

REPORT OF

FRUIT EXPERIMENT STATIONS OF ONTARIO.

GUELPH, 17th December, 1894.

To the Honorable Minister of Agriculture:

SIR.—In presenting to you the first Annual Report of the Board of Control of the Fruit Experiment Stations of Ontario, which have been established by your authority, we desire to call your attention to the progress which has been made in the experimental work in so short a time after its inception.

The experimenters thus far chosen, being practical fruit growers of long experience, are able at once to give us many valuable results of experimental work carried on at their own expense during past years.

The tabular statements which are included in this report are very incomplete, owing to the fact that the experimenters did not receive their forms until late in the season. Another year we may expect that these forms will be filled in much more in detail. The descriptive tables, when completed, will form a full and reliable description of all the varieties of fruits grown and tested in our province, showing their exact value for planters, and the use for which they are adapted. The newer varieties of fruits will also be fully described and their value given as quickly as they can be thoroughly tested, and it is hoped that fruit growers will not be led to waste money in novelties, as hitherto, but defer buying them, unless for private testing, until they have received the approval of some one of our experiment stations. The tables of station records are intended to give a complete account of the various experiments that are being conducted each year at the different stations under the direction of the executive committee, and these will prove, from year to year, a source of most valuable information to practical fruit growers.

The plan adopted for our work is quite unique, and therefore, when fully developed, should command the especial attention of horticulturists of every country.

We have the honor to be, Sir,
Your obedient servants,

JAMES MILLS,
Chairman, Guelph, Ont.

L. WOOLVERTON,
Secretary, Grimsby, Ont.

December, 1894.

BOARD OF CONTROL, 1895.

REPRESENTING THE COLLEGE.

JAMES MILLS, M.A., LL.D., Guelph ..... President.
H. L. HUTT, B.S.A., Guelph ..... Horticulturist.

REPRESENTING THE FRUIT GROWERS' ASSOCIATION FOR 1895.

A. M. SMITH ..... St. Catharines.
A. H. PETTIT ..... Grimsby.
W. E. WELLINGTON ..... Toronto.
L WOOLVERTON, Secretary ..... Grimsby.

EXECUTIVE COMMITTEE.

Chairman—JAMES MILLS, M.A., LL.D ..... President of the Ontario Agricultural College, Guelph.
Secretary—L. WOOLVERTON, M.A ..... Secretary of the Ontario Fruit Growers' Association, Grimsby.
Official Visitor—H. L. HUTT, B.S.A ..... Horticulturist of the Ontario Agricultural College, Guelph.

STATIONS ESTABLISHED, 1894.

Stations.	*Specialty.*	*Experimenter.*
Bay of Quinte:		
Northumberland, Prince Edward and Hastings	Apples and Pears	W. H. Dempsey, Trenton.
Simcoe:		
Simcoe and Victoria	Apples	G. C. Caston, Craighurst.
Wentworth:		
Wentworth, Brant and Oxford	Grapes	M. Pettit, Winona.
Southwestern:		
Essex, Kent, Elgin and Norfolk	Peaches and Strawberries	W. W. Hillborn, Leamington.

FRUIT EXPERIMENT STATIONS OF ONTARIO.

ORGANIZATION.

At a meeting of the Fruit Growers' Association of Ontario at Peterboro' in December, 1893, a committee was appointed to devise a practical scheme for experimental horticulture, contemplating several small stations. The gentlemen comprising this committee were Messrs. John Craig, Horticulturist of the Dominion Experimental Farms, Ottawa, A. McNeill, of Windsor, and W. W. Hillborn, of Leamington.

This committee prepared the accompanying scheme, and submitted it to the members of the directorate through the Secretary for their approval. The directorate having approved of it, the scheme was brought before the Hon. John Dryden, Minister of Agriculture, on the 13th March, by two members of the executive—the Vice-President and the Secretary—accompanied by Mr. W. M. Orr, a director, and Mr. A. McNeill of the committee, and received his partial approval. Mr. Dryden was desirous of knowing the names of the experimenters and the location of the stations.

In order to do this, it was necessary to elect a Board of Control. Votes were called for by the Secretary, and on March 31st, the Vice-President and the Secretary acting as scrutineers, these were counted. The result was the election of the following gentlemen to represent the Fruit Growers' Association on the Board of Control, viz., Messrs. A. H Pettit, A. M. Smith and D. Nicol.

First Meeting of the Board of Control.

The first meeting of the Board of Control was held at Guelph at the Agricultural College, on Wednesday evening, April 5th, 1894, at the call of President Mills.

There were present Dr. James Mills, President of the Ontario Agricultural College Guelph, (*ex officio*) Chairman; Mr. H. L. Hutt, Horticulturist, O.A.C., Official Visitor to Stations; Mr. A. H. Pettit, Mr. A M. Smith and Mr. L. Woolverton, Secretary of the Fruit Growers' Association of Ontario and *ex officio* member of the Board.

The Secretary first read the scheme which was carefully considered, and was ordered to record certain charges in the wording. The changes are incorporated in the text of the scheme as follows:

FRUIT EXPERIMENT STATIONS FOR THE PROVINCE OF ONTARIO.

The exhibits of fruit made by Ontario at the World's Columbian Exposition gave to the world a truer conception of the possibilities and attainments of the province. It also inspired the fruit growers of the province with a better appreciation of the capability of her soil and climate for the production of fruit—that "flower of commodities"—in its highest state of excellence. It has also emphasized in a general way the fact that every variety of fruit varies in respect to appearance and quality according to the soil and locality in which it is produced, and has a greater or less area in which it reaches most nearly perfect development.

Our knowledge of the variations in habit of growth and quality of the fruit due to soil and climatic effects is vague and undefined, and data with regard to the relative success of varieties in different sections is lacking. The fruit interests of the province suffer in consequence.

The Fruit Growers' Association of Ontario has long recognized the advantage that would result from establishing a system of experiment stations, particularly designed to collect information of this character and to promote the fruit interests of this province generally. That they are sincere in the matter is attested by the fact that a standing committee was appointed three years ago, whose duty it was to do everything in its power to bring the scheme to a successful completion. This committee has interviewed the Government annually, but thus far without any definite results.

The fruit growers of Ontario fully appreciate the liberality with which they have been treated by the Provincial Government, but are assured that the good use made of their grant has more than justified the expenditure. In witness of which they point with pride to their journal, the *Canadian Horticulturist*, which has a circulation as wide as the continent, is well known in Europe, and is recognized as the official organ of the fruit growers of the Dominion.

In view of the large capital invested and the annual revenue derived from the fruit industry of the province, which, according to recent statistics is second only in value to the hay crop, which takes the lead, your petitioners feel that they are justified in laying their desires before you with full assurance that they will receive at your hands that consideration which their importance deserves.

It is believed that the fruit interests of the province cannot be served best by the establishment of a single experiment station, no matter where it might be located, and, further, that results more useful and more immediately available would be obtained by the establishment of a number of small and inexpensive trial experiment stations. These might be carried on in co-operation with the various fruit growers in different parts of the province, who already are specialists and have made a financial success of growing one or more classes of fruit. For example, the services of a grape specialist, or a plum or peach grower might be secured with all the advantages accruing from knowledge gained by practical experience.

Organization.

The Board of Control shall consist of the President and the Horticulturist of the Ontario Agricultural College and three members of the Fruit Growers' Association elected by the directors of that body, with the secretary of that body as *ex officio* member.

The line of work to be pursued by each station shall be decided upon by the Board of Control and shall be submitted to the directors at the time of the annual meeting of the Fruit Growers' Association for approval; together with a full report of the work of the year, for incorporation in the annual report.

A local committee for each station, whose duty it will be to carry out the directions of the general Board of Control, shall consist of the experimenter and the director of that district, acting with the Secretary of the Fruit Growers' Association.

All plants shall be purchased by the Secretary of the Fruit Growers' Association after consultation with the experimenter, subject to the approval of the Board of Control.

Experimenters and their Duties.

Each experimenter should be a specialist and should have suitable soil for the cultivation of the particular class of fruit of his own choosing which is mainly to be tested at the station of which he has charge. He shall be elected by vote of the Board of Control subject to the approval of the directors of the Fruit Growers' Association; and in case of incapacity or dereliction of duty shall be dismissed and his place filled by action of the same body.

The experimenters shall be members of the Fruit Growers' Association of Ontario.

The first duty of each shall consist of making an accurate and trustworthy report of all varieties of the particular fruit assigned which he has on trial up to date. To this list shall then be added all the desirable sorts of late introductions. These shall be obtained by the Secretary of the Fruit Growers' Association, in consultation with the other two members of the executive committee, subject to the approval of the Board of Control, and shall be properly planted, carefully recorded and labelled.

The Board of Control shall have power to arrange and manage all details in regard to perfecting the organization not otherwise provided for.

Collection and Diffusion of Information.

Brief reports shall be rendered to the editor of the *Canadian Horticulturist* for publication in that journal, once in two months during the growing season; and a complete report not later than the 15th of November of each year shall be forwarded to the Horticulturist of the Ontario Agricultural College for publication, if deemed by him to be sufficiently important.

It is suggested that one or more annual visits be made to each station by the Horticulturist of the Ontario Agricultural College, at the periods most favorable for securing information for publication in bulletin form, and pointing out to the secretary any faults observable in the station, as well as indicating useful lines of work which might be inaugurated. At the time of these visits he will be received by the experimenter as the official representative of the Board of Control as well as of the Government.

Expenditure.

It is suggested that ten trial stations be organized and located as follows.

It is believed that an appropriation of $2,000 will be sufficient to initiate and carry on this work successfully, including the purchase of plants for each station the first and succeeding years.

No. 1. Apples and pears .....
Located ; managed by

No. 2. Apples .....
Located ; managed by

No. 3. Apples and plums .....
Located ; managed by

No. 4. Peaches and strawberries .....
Located ; managed by

No. 5. Plums and cherries .....
Located ; managed by

No. 6. Grapes .....
Located ; managed by

No. 7. Cherries and small fruits .....
Located ; managed by

No. 8. Grapes and currants .....
Located ; managed by

No. 9. Strawberries and peaches .....
Located ; managed by

No. 10. Gooseberries and raspberries .....
Located ; managed by

Contingencies .....

Estimated Expenditure for 1894.

Five stations at $100	$500 00
Trees, plants, etc	200 00
Clerical work—corresponding with stations, purchasing stock for each, keeping lists, making tabulated statements for publication	50 00
Meetings of Board of Control	75 00
Travelling expenses of official visitors	75 00
Contingent fund	100 00
	$1,000 00

STATIONS PROPOSED TO BE ESTABLISHED IN THE SPRING OF 1894.

No. 1. Apples, pears (and small fruits) $100 00
Located in Prince Edward Co.
Managed by W. H. Dempsey, Trenton.

No. 2. Hardy apples, (strawberries, currants, raspberries and hardy cherries) 100 00
Located in Simcoe Co.
Managed by G. C. Caston, Craighurst.

No. 3. Plums, apples, (pears, grapes and small fruits)..... 100 00
Located in Huron Co.
Managed by

No. 8. Grapes, (currants, plums, pears, and blackberries)..... 100 00
Located in Wentworth Co
Managed by M. Pettit, Winona.

No. 9. Peaches and strawberries, (currants, cherries, gooseberries, raspberries, plums and quinces) 100 00
Located in Essex Co.
Managed by W. W. Hillborn, Leamington.

EXPERIMENTER'S AGREEMENT.

I, of the County of and Province of Ontario, do promise and agree to plant properly and carefully all fruit trees and plants entrusted to me for experimental purposes, and to give them proper care in the way of cultivation and pruning, and that I will keep a record of the same and report as to the growth of the trees and plants, their hardiness, etc., size and quality of the fruit, time of ripening, and all other information required, within my power and ability to give. I will be guided by the Board of Control in making these reports, and report when and to whom they may direct. I further agree to be guided by the Executive Board as to plan and methods of experimental work entrusted to me. I also agree to give any information I can to or asked for by the Horticulturist of the Ontario Agricultural College, or by the Secretary the Fruit Growers' Association of Ontario.

In consideration of faithfully carrying out the experimental work as outlined above, and making reports as directed, I am to receive annually the sum of dollars. All trees, plants, etc., entrusted to me for experimental work, when once planted shall become my property, but not to be used in any way to advance personal ends, such as controlling or propagating new varieties; and I further bind myself not to give away or sell any trees, plants, buds or scions of any varieties entrusted to me for testing, except with the express permission of the owner of the same.

Should I fail to carry out the wishes of the Board of Control, I hereby agree to forfeit all or any part of my annual grant as considered right and just by the said Board of Control.

(Signed).....

Dated

FINANCES.

The question of finances was taken up, and it was ordered that the elective members of this Board be allowed $2 per day and their expenses in attendance on meetings of this Board.

Ordered that $100 be allowed each experimenter for his services during the present year, and that five stations be established, providing suitable men and locations are obtainable.

Ordered, that the sum of $200 be set aside for the purchase of trees, plants, etc , for the first year.

Ordered that $50 be allowed for the necessary clerical work, correspondence with stations, purchasing stock for each, keeping lists, making tabulated statements for publication, etc.

Adjourned.

James Mills, Chairman. L. Woolverton, Secretary.

NOTES OF WORK.

In April your Secretary entered into correspondence with those experimenters who had been chosen by the Board of Control, sending them copies of the scheme and the agreement between the Executive Committee and the experimenters, asking that these be duly signed and returned, in case it was the desire of the person addressed to enter upon the work. These conditions were duly accepted, and the agreement properly signed and returned to the Secretary by Messrs. G. C. Caston, of Craighurst; M. Pettit, of Winona; W. H. Dempsey, of Trenton; and W. W. Hillborn, of Leamington.

The next step was to ask from each a complete list of the varieties of fruits which had already been grown by him. These were promptly sent in by the experimenters, and the lists were arranged alphabetically for each station in separate books, with space allowed for additional entries from year to year. This record in the hands of the Executive is most important, so that in ordering new stock for the stations, there will be no danger of duplicating varieties.

I append a copy of these lists of varieties of fruits which are now under test at the various stations. The intention is to fit out each station with all the known varieties of their specialty which have promise of any value in our province, and a limited list of other fruits also, as far as possible. In this way the adaptability of new fruits of different kinds may be specially tested in various parts of our province. Most of the experimenters, we may add, have signified their intention of devoting a certain plot of ground to experimental work with novelties, in addition to those trees and plants which may be planted in their regular commercial orchards.

BLANK FORMS AND FIELD BOOKS

On the 25th of May a meeting of the executive was held, at which a general outline was agreed upon for the blank forms and record books to be prepared for the use of the various experimenters in keeping a record of their work, and in reporting the same to the secretary for publication in the report of the Board of Control, a duplicate copy of which is also to be sent to Mr. H. L. Hutt, Horticulturist of the Agricultural College, Guelph, from which he may gather material for bulletins for other special publications. These bulletins will be published separately and also included in the report of the Board of Control. These blank forms were duly prepared in detail by the secretary and, as soon as they were received from the printers, which was not until after a considerable delay, each station was furnished with an abundant supply of copies. Small field books were also prepared for the use of the experimenters, which embraced the same headings as were required in the blank forms, but in a convenient form to be carried in the pocket. The printer's bill for these blank forms was heavy, but the stock is sufficient to furnish the ten proposed experiment stations for some years to come.

VISITS TO FRUIT STATIONS.

In accordance with the instructions of the Board of Control, Mr. Hutt and the Secretary spent a considerable amount of time in visiting the stations already established, in order to know exactly the form which the work was assuming at each station, and also in visiting those places from which request had been received for the establishment of new stations. Following are reports of official visits :

The South-Western Station.

On Friday, the 15th of June, we visited the Experiment Station in Essex Co. Leamington is prettily situated on the shore of Lake Erie, and the soil in that vicinity is mostly light sand, well adapted to the cultivation of the peach. The farm of Mr. W. W. Hillborn, our experimenter, is situated in the heart of this favored locality, and is being almost entirely devoted to the cultivation of the peach and strawberry. Of the latter he has about six acres in full bearing, and has already tested more than one hundred varieties. Of the kinds now in cultivation, he prefers for market purposes, Bubach 24, Williams, Wilson, Saunders and Woolverton. As an early berry, Mr. Hillborn prefers the Beder Wood to Michel's Early, because it is just as early and much more productive, and for a late berry the Parker Earl, which is about as productive as Bubach 5, and is a fine showy berry. The plants have peculiar habit of growth, not spreading as much as other berries, but keeping well in hills. For a table berry the Governor Hoard is good, having an extra fine flavor. The Middlefield is not a good market berry. The foliage is very healthy and beautiful, but does not endure drouth very well. One sample of this variety measured one and five-eighths inches in length by one and three-quarters in breadth. But Mr. Hillborn's great specialty is in the cultivation of the peach. He has already planted about sixty acres of this fruit, and is to plant out about fifty acres more in the spring of 1895. When planted, his will be the largest peach orchard in Canada. He has laid out his orchard in a systematical way, in the manner of the streets of a town. The large drives or streets are thirty feet in width, and the blocks contain five hundred trees each, with twenty rows in each block. His plan is to number the block, then the rows and the trees in each row. His record book then will enable one to find at once any variety in any part of the orchard. The light sandy soil of this locality, which is very dry and naturally well drained, though rather too light for strawberries, is exactly suited to the cultivation of the peach. The fruit seems scarcely ever to fail to produce a crop. It was stated by one of the fruit growers in that section that there had not been more than one or two total failures during the past fifteen years. There is some inconvenience in shipping to Toronto on account of the poor railway connection, so their principal shipments are made to Buffalo, London, Detroit, Sarnia and St. Thomas.

Mr. Hillborn's method of protecting his trees from the peach tree borer is worthy of notice. To thirty gallons of water he adds equal parts of lime and ashes, about one bushel of each ; to this he adds one pint of crude carbolic acid. With this mixture the trees are whitewashed, and he claims that this will be a perfect protection.

Adjoining Mr. Hillborn's farm are two other fruit farms, which we visited with considerable interest. One of them belongs to Mr John Mitchell, who has about twenty-five acres in fruit, and about ten of these in peaches. The variety which he has planted most largely is the Yellow Albridge. He has also planted the Crawford, Tyhurst Seedling, and numerous other varieties. His orchard is remarkable as an example of shortening-in. He heads his trees about a foot and a half from the ground from the very first. He goes over his trees every year, in the month of June, with his shears pruning off about one-half the young growth. This applies to them the same principle that is often recommended for pruning grapes, namely, pinching off the young shoots, leaving two or three leaves beyond each bunch of grapes. In the same manner Mr. Mitchell leaves two or three leaves beyond the last peach of each limb. His trees are remarkably compact, no long straggling growth has ever been allowed, and though many of them were eight or ten years planted, they did not spread over more ground than many trees unpruned would do in half the time. He finds this method more convenient in picking,

besides the bearing wood is kept in a dense head, and the tree lives to a much greater age. His apple orchard was well cultivated, and the trees beautifully formed. He is applying the same method of shortening-in to his apple orchard that he does to the peach. When taking us to visit his apple orchard, we drew his attention to the apple scab which was beginning to affect the leaves and fruit. He was surprised, and said that it had certainly appeared within the last few days. Upon further inquiry in other parts of Ontario, we find that this fungus has suddenly appeared between the 10th and 20th of June, owing to the very hot weather succeeding the wet season. In Mr. Mitchell's orchard the Ben Davis and Greening apples are ruined with the scab, and are rapidly dropping to the ground. Otherwise there would have been an unusually fine crop. Not only were the apples falling to the ground in many orchards in Essex, but the leaves also are suddenly turning black, all the result of this apple scab Since returning home we have examined the apple orchards at Maplehurst, and found that where the Bordeaux mixture has been faithfully applied the scab has been largely kept in check. No doubt the present season will be a clear proof of the benefit and efficacy of copper sulphate in preventing this evil.

The Simcoe Station.

On the 23rd of June we visited the Craighurst station, which is located in Simcoe county, about twelve miles northwest of Barrie, on the Penetarguishene road. Fruit-growing in that section of the country is not nearly as extensively engaged in as it might be. Now and then a nice young orchard may be found, and occasionally a well-kept plantation of small fruits, but the majority of farmers there seem to be satisfied along that line with what nature has done for them, and she has certainly dealt with them very liberally, for strawberries, raspberries and plums grow wild in abundance. One of the direct benefits of the experiment station in that section will be to show those who visit it how much more abundantly she will deal with them when improved varieties are selected and given good cultivation. And probably no better man in that section could be selected to demonstrate this fact than Mr. Caston, the manager of the Craighurst station. Mr. Caston is an enthusiastic, energetic fruit grower. He was the first man in that section to pack apples in barrels for shipment, previous to which they had always been sold by the bushel or bag in the local markets. The soil at the Craighurst station is a light, sandy loam, with a retentive subsoil, and, on account of its great uniformity, it is admirably adapted for experimental work. Mr. Caston has not confined his attention to the growing of any one particular fruit, but has done more or less with them all. Apples, however, have been most extensively grown, and of these he has a thrifty young orchard in full bearing, containing a large number of varieties. A number of new varieties were set out last spring, and he has in the nursery about eighty Russian varieties ready for planting next spring. The Duchess of Oldenburg, a favorite in most places, seems to do particularly well in that section. Many of the trees of this variety were breaking down under their load. Mr. Caston says that they have borne heavily almost every year ever since they were planted, and that, on account of the brisk demand for them in the northern markets, he has found it to be one of his most profitable varieties. On account of the ease with which it may be grown, and its natural exemption from the apple scab, it may well be called the "lazy man's apple." At Craighurst, as in other parts of the country, the apple scab is very bad this year. To it may be attributed the general falling off of the apple crop, which at first appeared so promising. Every year it becomes more and more evident that spraying must be adopted if full crops of fruit are to be obtained. And since the Bordeaux mixture has proved to be a successful preventive of the apple scab and similar fungous diseases, the wide-awake fruit grower may look on these as friends in disguise, as they simply give to him who sprays the monopoly of the fruit trade.

At the time of our visit to Craighurst the raspberries were at their best. Among the reds the Cuthbert still proves to be the "queen of the market." The bushes of this variety were laden with large, bright, firm berries, which stand shipment well. The Shaffer is also an excellent variety. In points of flavor and productiveness we are inclined to think it surpasses its more favored rival, the Cuthbert, but its lack of firmness and

dark color makes it a poor market berry. For canning and home use, however, it should have a place in every garden. In fruit and habit of growth the Shaffer is intermediate between the red raspberry and the black cap. We noticed, also, that, like the black cap, its canes are this year badly affected with the anthracnose, another disease, which can easily be held in check by the Bordeaux mixture. The large blackberries are not much grown in that part of the country, and it is generally supposed they are too tender to stand the winter, but the great crop on those of the Snyder variety at Mr. Caston's plainly shows what can be done. It certainly was a treat to look at.

Mr. Caston has tested in the past quite a variety of strawberries, and has this year added to his collection a large number of new varieties. The Crescent and Wilson have always been his favorites for the market, but he is inclined to think that these old varieties may have to give place to some of the newer ones, such as the Bubach, Bederwood, Parker Earle, and Woolverton.

Grapes at that section have not proved a success, although a number of varieties have been tried, the seasons, as a rule, being too short to ripen the fruit. Gooseberries and currants do well. A number of varieties were set out last spring, and it is hoped that in a few years some valuable information may be gleaned from these.

The Wentworth Station.

Winona is on the southern division of the main line of the Grand Trunk Railway, about ten miles east of Hamilton and three or four miles west of Grimsby village. The soil in that section is generally a rather heavy clay loam. To many its hard, red appearance might make it appear as unsuitable for fruit land, but the immense crops of plums, pears and grapes raised there show what it is capable of doing. In some places, especially toward the "mountain," the soil is lighter and more of a sandy loam, like that at Grimsby. It is on such soil that the peaches are grown.

The amount of fruit shipped every day from Winona during the fruit season is something enormous. A number of the most extensive growers in the neighborhood have built substantial fruit houses at the railway station, where they haul and store their fruit, and ship from day to day as convenient, or according to the demands of the market. At the time of our visit five cars were being filled, principally with grapes and pears.

Mr. Pettit's farm is only a few minutes' drive from the station, on the main road running along the base of the mountain from Hamilton through Grimsby to Niagara. The Hamilton, Grimsby and Beamsville electric road, recently opened, runs through the centre of the place. There are about one hundred and seventy acres in the farm, about seventy of which are in fruit.

The vineyard covers an area of about twenty acres, and is made up of a succession of blocks of about four acres each, so laid out that cultivation can be given through these from one end of the yard to the other, a distance considerably over a quarter of a mile. Mr. Pettit is a thorough cultivator, and his vineyard is worthy of an inspection at any time. A large photograph of it was shown last year in the Canadian fruit section in the World's Fair at Chicago. In this vineyard there are over eighty varieties of grapes in full bearing. To enable him to become thoroughly familiar with all his varieties, Mr. Pettit has planted a vine of each variety along the drive running through the vineyard, and these are labelled, so that they can readily be seen when driving through. Out of all this large list Mr. Pettit gives the following as some of his most profitable varieties: Black—Worden, Wilder and Concord Red—Lindley, Agawam, Delaware and Catawba. White—Niagara and Moore's Diamond.

We were much pleased with Mr. Pettit's method of marketing his large crop. Unlike the majority of growers, he does not ship everything to one market, to be disposed of by commission men as best they can, but instead he has secured regular customers in the retail dealers in various parts of the country. With most of these he has telephone communication, and fills their orders, large or small, from day to day as required. In this way he was shipping from one to two tons per day, and was receiving from one to two cents per pound more than those who were shipping steadily to the large and usually glutted markets.

In addition to the grapes, Mr. Pettit has a large orchard of pears and plums. These fruits do particularly well upon the heavy soil in that locality. This past season, however, the trees suffered much from the drouth, and the fruit was not up to the average. The varieties in greatest favor there for profit, named in order of ripening, are: Beurre Giffard, Bartletts, Flemish Beauty, Duchess and Keiffer.

Out of ten varieties of plums in bearing Mr. Pettit mentioned the following as his most profitable varieties: Lombard, Washington, Bradshaw, Yellow Egg and Reine Claude. Fourteen new varieties were added to the varieties of plums last spring, and when these come into full bearing no doubt the above lists will be considerably altered.

The plot planted with new varieties last spring is about two acres in extent, and is located so that it can be enlarged as the work progresses. The soil is all of a uniform character, an important requisite in conducting variety tests. The newly planted collection includes 23 varieties of grapes, 27 of peaches, 14 of plums, 10 of cherries, 9 of currants, 5 of gooseberries, 6 of raspberries, and 16 of strawberries. From these, in addition to the large number of varieties already in bearing, it is expected that some valuable information will soon be obtained.

The Bay of Quinte Station.

During the month of September a visit was paid to the apple and pear experiment station near Trenton, which is managed by Mr. W. H. Dempsey, a son of the late P. C. Dempsey, so many years a prominent director of the Ontario Fruit Growers' Association. Here we found a most extended list of apples already under cultivation Mr. P. C. Dempsey had always delighted in experimental work and in hybridizing, as well as testing all the varieties he could procure from far and near. As a result there are already under cultivation at this station nearly 150 varieties of apples and a very large number of pears, many of them having been top-grafted upon trees of bearing size, and thus a large number have already been tested, and the results can be made public at an early date. Many varieties that have been highly commended and introduced with a great flourish have proved to be totally worthless, and will therefore be reported upon and no longer recommended for cultivation. Other varieties are very promising and will be planted more extensively and reported upon more fully from time to time.

Mr. Dempsey's farm, which consists of over 200 acres, is remarkably well adapted to the cultivation of apples and pears, and is situated part of it in the county of Northumberland and part in the county of Prince Edward. From an eminence nearly 300 feet high, in the rear of his orchard, portions of three counties are in plain view, and the scenery is magnificent. Up the sides of this hill a large vineyard was planted many years ago; but, owing to the difficulty of cultivation, and to the fact that grapes are not the most profitable fruit to grow in this locality, this vineyard has of late years received little attention. Mr. Dempsey has 40 acres of apple orchard in bearing, and in some portions the crop is remarkably fine, even this season, but in other parts there is very little fruit.

One of the most productive varieties is the well-known and popular Fameuse, which is difficult to grow free from scab. The greater part of Mr. Dempsey's crop will be first quality, and will bring him the highest market prices. Two trees of this variety fourteen years planted will, he estimates, yield him ten barrels of shipping apples.

The Ben Davis is one of Mr. Dempsey's favorites for profit, his trees yielding him fine crops of smooth, clear apples. He says it sells equally well with the Baldwin, and is, of late years, more productive. Four trees of this variety twelve years planted yielded him 25 barrels of shipping apples in 1892.

Another apple which Mr. Dempsey considers one of the very best for profit is the Ontario. He has quite a number of trees top-grafted to this variety, and all are loaded heavily with large, clear fruit. Mr. Dempsey says he can confirm everything good that has been said of this apple in any of the reports of the Fruit Growers' Association. It needs good cultivation, and should be thinned, as it is inclined to overbear. In the market he sees little difference in the selling prices of this variety, and the Northern Spy, both being considered equally desirable by buyers. Indeed, few buyers can distinguish

one from the other. In productiveness it is equal to the Ben Davis. It will be remembered that the Ontario is a cross between the Northern Spy and the Wagener, produced by the late Charles Arnold of Paris, and distributed by the Fruit Growers' Association in the year 1879.

Baldwins in some portions of Mr. Dempsey's orchard are well laden with fruit of fine size and color.

There are probably 100 varieties of apples which have been tested by Mr. Dempsey, which he would not recommend for general planting; such as Mountain Beet, which loads well, but is of little value; the Lady, which was once in great demand, but now, on account of its extremely small size, is no competitor for the fine varieties under general cultivation; Seek-No-Farther which does not give a sufficient quantity of fruit to make it profitable. There are whole rows of trees grafted to hybrids between Spy and Russet, not one of which appear to be of any value. There are 100 trees of Bailey Sweet top grafted to Golden Russet, which yield fine fruit, but the union between these two varieties is so incomplete that the trees are gradually breaking off at the place where they were top-grafted. Mr. Dempsey has not yet tried grafting the King upon the Golden Sweet, but says that Mr. W. R. Dempsey of Albury, has grafted the King upon the Red Astracan and upon the Pound Sweet, and finds it productive. The King apple is one of the highest-priced apples in the English markets, but, as commonly grown, is very unproductive. Possibly experiments in the future will prove that when top-grafted upon certain other varieties it may produce more abundantly.

Mr. P. C. Dempsey's name will long be handed through future generations of horticulturists by means of some of the valuable varieties which have been produced through his genius and patient experiments, one of which is the well-known Dempsey pear. A visit was made to the original tree of the Dempsey pear, which stands upon the old homestead of the Dempsey family at Albury, where a large number of varieties of pears have been tested. The tree has been carefully cut for propagating purposes, but, notwithstanding, has produced good crops of fruit, which are all carefully preserved for the purpose of introducing this pear to the trade. A Canadian nursery firm has purchased the right of its propagating for a considerable sum.

Mr. Dempsey is planning to set aside a few acres of ground for special experimental work in pears, and here all varieties furnished him by the Board of Control will be planted and tested.

On the whole, the Committee of Inspection is able to report to the Minister of Agriculture that the experimental work which has been undertaken is progressing favorably, and promises even better results than were at first anticipated. The experimenters and locations have been most carefully selected, and it is evident that in no instance has there been as yet any mistake made in the appointments.

The Georgian Bay Station.

About the middle of September we visited the Beaver Valley, to consider its claims as the location for a plum experiment station. From Thornbury, near Meaford, this valley winds among the heights of the "Blue Ridge," or "Mountain," as it is called in the Niagara district, for twenty miles back to Eugenia Falls, affording some of the most picturesque scenery in Canada. The finest of plums are grown in this section, both in quality and beauty of appearance, and the yield of fruit is most remarkable in quantity.

Mr. C. W. Hartman very kindly engaged a carry-all, and, along with another gentleman, piloted us throughout this whole valley. Clarksburg is itself a small but prosperous town, founded many years ago by Mrs. Hartman's father, Mr. Marsh. It has waterworks, drawing its supply from the Beaver river, and shows other evidences of prosperity.

One of the most interesting fruit farms which were visited in this locality was that of Mr. John Mitchell, consisting of about 50 acres, of which fifteen are devoted to fruit. The whole place is in a most excellent state of cultivation. The thrifty farmer is known by his fences, and those of Mr. Mitchell are quite models in this respect. The particular fruit for profit with him, as with most growers in this valley, is the plum, and the success attending his efforts was well shown by the immense loads of Coe's Golden Drop, Lombard, Glass Seedling, etc., which were harvested from his trees.

Mr. Hartman showed the same success in his own orchard with plums, and not far away in the vicinity of Collingwood there are many other noted plum growers, and among them Dr. George M. Aylesworth, a well-known member of the Fruit Growers' Association, who ships a large quantity of this fruit both northward as far as North Bay by rail and Sault Ste. Marie by boat, and southward to Toronto and Montreal by express. Among all these growers a great deal of difficulty has been found in identifying varieties, owing to the frequent mistakes made by careless nurserymen in the propagation of trees, and to the frequent habit of substituting one variety for another when filling orders. Should a plum station be established in this vicinity all varieties will be grown and identified, and, little by little, all mis-named varieties grown in the section will be identified.

Mr. Mitchell's apple orchard was also worthy of attention Here, as indeed all over this section, there is a good crop of apples, the best probably in the whole province, for the apple scab thus far has not become so prevalent in this northern section as it has in the southern districts. So successfully is the apple cultivated in this section that a large apple storehouse has been erected near Thornbury by Messrs. Ingersoll & Hunt, where apples are stored in barrels and repacked for export just at such times during the winter season when they will bring the most money. The double wainscotted walls are filled with sawdust, and both on the outside and inside of this double wall are air spaces. This house is cold in summer and sufficiently warm in winter to preserve the fruit from freezing without fire.

Some of the principal varieties of apples grown for market in this district are Ben Davis, Spy, King, Baldwin, Ribston Pippin, Fameuse, Cayuga Red Streak, St. Lawrence and Golden Sweet, but of all kinds the most productive is the Ben Davis. Some five-year-old trees of this variety in Mr. Mitchell's orchard are loaded to the very ground with fine, well-colored fruit, and this early and regular bearing seemed to be a marked characteristic of this variety.

Pears are not widely cultivated as yet in this section, but the Flemish Beauty, which is hardy, succeeds admirably. Some trees of this variety in Mr. Mitchell's orchard produced fruit which was remarkably fine. One tree in particular, which he showed, which was fifteen years planted, had produced four barrels of pears in the season of 1890, from which he had cleared $15.55 ; and similar crops at other times have been harvested. The fruit of this season is of a fine size and well colored, a special feature being the absence of scab, which so destroys the Flemish Beauty in some sections.

The people of the Beaver Valley are alive to their own interests, and have vigorously enforced the black knot by-law during the past seven years; and this forethought has been worth thousands of dollars in this valley.

We may add that since our visit, the Board of Control has decided to appoint Mr. John Mitchell experimenter in plums and other fruit for the Georgian Bay District.

H. L. Hutt,
L. Woolverton.

REPORTS FROM STATIONS.

In view of the lateness of the season when the work was got into operation, few results can be expected for publication in this our first annual report. But, since our experimenters are practical fruit growers and already engaged for a long time in the work of experimenting, more or less, with many varieties at their own expense, they are able to furnish us, even now, with some of the results that are worthy of publication, and in compliance with their agreement, they sent in to us about the 15th of November, 1894, the following reports of their summer's work, which, we believe, will embrace some matters of general interest and be of benefit to Ontario fruit growers.

Year by year the descriptive lists will be filled in and amended, until we hope to have every known variety of any consequence faithfully described and figured, and its history and true value carefully recorded.

Very little has been done in the way of records of station work during the past season, because it was too late to plan any special lines of experiment, but next year more complete reports under this head may be expected.

VARIETIES OF FRUITS NOW UNDER TEST AT STATIONS.

Varieties added in Spring of 1894 are indicated by an asterisk (*).

BAY OF QUINTE EXPERIMENT STATION.

Specialty—Apples and Pears. Experimenter—W. H. Dempsey, Trenton, Ont.

APPLES.

*Acker.
Adam's Pearmain.
Alexander.
American Golden Russet.
*Annette.
Antonovka.
*Andrew's Sweet.
Arabka.
Arkansas Queen.
Arnold's Beauty.
Bailey Sweet.
Baldwin.
Beauty of Kent.
Ben Davis.
Benoni.
Belle Pool of Vermont.
*Bishop Bourne.
Blenheim Pippin.
*Blunt.
Bonum.
*Brockville Beauty.
Cabashea.
Canada Baldwin.
Cayuga Red Streak.
Cellini.
Chenango Strawberry.
Colvert.
Cox's Orange Pippin.
Cranberry Pippin.
Drap d'Or.
Duchess of Oldenburg.
Ella.
Fallawater.
Fall Jenneting.
Fall Pippin.
Fameuse.
*Gavel Pippin.
Golden Sweet.
Golden White.
Grand Duke Constantine.
Grand Sultan.
Gravenstein.
Green Fameuse.
Grime's Golden.
Haas.
Hardstine's Pippin.
Hawley.
Hawthornden.
Hawthornden New.
Hawthornden's Pippin.
Highland Beauty.
Horn.
Holland Pippin.
Hubbardston Nonsuch.
Hurlburt.
Jersey Sweeting.
Jonathan.
Kentish Fill-basket.
Keswick Codling.
Kinkead.
Kinnaird's Choice.
Lady.
Lady Henniker.
La Rue.
*Longfield.
Lord Burlelgh.
Lord Duncan.
Lord Suffield.
Maggie's Favorite.
Magog Red Streak.
Maiden's Blush.
Mann.
Margil.
Mother.
Mountain Beet.
Mountain Tulip.
Munson Sweet.
McIntosh Red.
*McMahon.
Newtown Pippin.
Norcaster Spy.
Northern Spy.
Northfield Beauty.
*Northwest Greening.
Old Pearmain.
Pewaukee.
Pomme Grise.
Pomme Grise d'Or.
Primate.
*Princess Louise.
Rambo.
Rawles Janet.
Red Astrachan.
Red Bietigheimer.
Red Canada.
Red Russet.
Reinette Verte.
Rhode Island Greening.
Ribston Pippin.
River's Winter Peach.
*Rochelle.
Roxbury Russet.
Saxton.
*Scott's Winter.
Shannon.
Shiawassee Beauty.
Sops of Wine.
Stuart's Golden.
Stephen.
St. Lawrence.
Stump.
Stark.
*Sutton Beauty.
Swaar.
*Switzer.
Talman Sweet.
Tetofsky.
Tompkin's King.
Trenton.
Twenty Ounce.
Vandevere.
Vermont Sweet.
Wagener.
Wealthy.
Westfield Seek-No-Further.
Wellington.
Wine Sap.
*Winter St. Lawrence.
Wolf River.
Yellow Belleflower.
Yellow Transparent.

PEARS.

Anjou.
Bartlett.
Belle Lucrative.
Beurre Gris d'Hiver Noveau.
Beurre Oswego.
Boussock.
Buffam.
Clairgeau.
Clapp's Favorite.
Duchess de Bordeaux.
Flemish Beauty.
General Todleben.
Giffard.
Hardy.
Howell.
Idaho.
Josephine.
Keiffer.
Lawrence.
Louise Bonne.
Mount Vernon.
Onondaga.
Reeder.
Seckel.
Sheldon.
Souvenir de Congres.
Superfine.
Tyson.
Urbaniste.
Vicar of Wakefield.

BLACKBERRIES.

*Kittatinny.
*Snyder.

PLUMS.

*Burbank.
*Willard.

RASPBERRIES.

*Caroline.
*Cuthbert.
*Golden Queen.
*Marlboro.
*Smith's Giant.
*Turner.

STRAWBERRIES.

*Auburn.
*Bubach.
Bubach 24.
*Enhance.
*Eureka.
*Florence.
*Great American.
*Great Pacific.
*Hatfield.
*Haverland.
*Lady Rusk.
*Little 24.
*Martha.
*Michel's Early.
*Moore's Early.
*Mrs. Cleveland.
*Saunders.
*Selette.
*Shaw.
*Warfield.
*Williams.
*Wilson.
*Woolverton.

SIMCOE EXPERIMENT STATION.

Specialty—Apples. Experimenter—G. C. Caston, Craighurst, Ont.

†APPLES.

† This list contains a large number of Russian varieties, kindly furnished by Mr. William Saunders, director of the Dominion Experimental Farms, free of cost to the Board.

Alexander.
*Anisim 18 M.
*Annette.
*Antonovka (Gibb).
*Aport 252.
*Arabka.
*Arabka Summer.
*Arabka Winter.
*Avondrius.
*Basil the Great.
*Beautiful Arkad.
*Belle de Boskoop.
Belleflower.
Blunt.
Blushed Calville.
*Bogdanoff.
Bode.
*Borovinka.
*Borsdoff No. 19.
*Canada Baldwin.
*Charlamoff 262.
*Crimean Bogg.
Duchess.
*Duchess Vor.
*Early Sweet.
*Enormous.
Fameuse.
*Flat Voronesh.
*Forest.
*Gipsy Girl.
*Golden Reinette.
Golden Russet.
*Golden Stone.
*Golden White.
*Grandmother.
*Green Fameuse.
Greening.
*Green Stripe.
Haas.
*Hibernal.
*Herren (Gibb).
*Karabovka 21 M.
*Karabovka 29 M.
*Kara Synap (a) Niemetz.
*Kara Synap (b) Niemetz.
King.
*Kluevskoe 457.
*Kourskains 984.
*Large Anis 413.
*La Rue.
*Ledenetz (Gibb).
*Ledenetz 30 M.
Little Hat.
*Longfield.
Longarcade.
*Lubsk Queen.
*Malone.
Mann.
*McIntosh Red.
*McMahon.
*Northwest Greening.
*No. 569.
*No. 585.
*Orel No. 1.
*Orel No. 5.
*Orel 980.
*Orel Not.
*Ostrekoff Glass (Fisk).
*Ostrekoff 472 (Beadle).
*Pepka Aport 26.
*Pepka Winter.
*Persian Bogg.
Pewaukee.
*Plodovidka.
*Princess Louise.
Raspberry.
*Red Aport.
Red Astrachan.
Red Bietigheimer.
*Red Queen.
*Red Reinette.
*Red Streak.
*Red Subluck No. 26.
*Reinette Grise No. 28.
*Rochelle.
*Romenska (Gibb).
*Romna.
*Rosy Voronesh (1277) (Beadle).
*Round Borsdoff.
*Royal Table.
*Russian Transparent.
*Russian Tyrol 4.
Sacharine.
*Sara Synap.
*Scott's Winter.
*Shiawassee Beauty.
*Silken Leaf.
*Simbirsk No. 2.
*Simbirsk No. 4.
*Simbirsk No. 10.
*Simbirsk No. 11 (4).
Spitzenburg.
Spy.
*Stark.
*Stetten No. 30.
Strawberry.
*Suislepp.
*Sunbeam.
*Sutton Beauty.
*Sweet Borovinka.
*Sweet Bough.
*Switzer.
*Taffot Winter Broskan.
*Titovka.
*Talman Sweet.
*Vargulek 55 Vor.
*Voronesh Reinette (Beadle).
*Wallbridge.
Wealthy.
*White Pigeon.
*Winter St. Lawrence.
*Winter Rambour.
*Wolf River.
*Yellow Transparent.

PLUMS.

*Arch Duke.
*Black Diamond.
*Grand Duke.
*Gneii.
*H. R. P. Egg.
Middleburg.
*Monarch.
*Peter's Gage.
*Prince of Wales.
*Prince's Yellow Egg.
*Quackenbos.
*Rochester German Prune.
*Shippers' Pride.
*Stanton.
*Union Purple.

CHERRIES.

*Bessarabian.
*Brussels Brown.
*Dyehouse.
*Griotte du Nord.
*Lestovka.
*Ostheim.
*Orel 24.
*Vladimir.

CURRANTS.

Black Naples.
*Champion.
Fay's Prolific.
Lee's Prolific.
*North Star.
*Red Cherry.
*Saunders.
*Versailles.
White Grape.

BLACKBERRIES.

*Agawam.
*Gainor.
*Kittatinny.
*Minnewaski.
*Snyder.

GRAPES.

*Amber Queen.
*Aminia.
*Black Eagle.
Concord.
*Cottage.
*Early Victor.
*Eaton.
*Elvira.
*Green Mountain.
*Ives.
*Janesville.
*Jessica.
*Lindley.
*Marmion.
*Missouri Riesling.
Moore's Early.
*Moore's Diamond.
*Moyer.
Prentiss.
Salem.
Vergennes.
Worden.

GOOSEBERRIES.

*Downing.
*Houghton.
*Industry.
*Pearl.
*Red Jacket.
*Smith's Improved.

RASPBERRIES.

*Caroline.
*Cromwell.
Cuthbert.
Golden Queen.
Gregg.
*Kansas.
Lovett.
*Marlboro.
*Palmer.
Shaffer.
*Smith's Giant.
*Superlative.
*Turner.

STRAWBERRIES.

*Advocate.
Auburn.
*Beder Wood.
Belmont.
Bubach.
*Bubach No. 24.
*Cameronian
*Captain Jack.
Crescent.
*Daisy.
*Edgar.
*Enhance.
*Eureka.
*Florence.
*General Putman.
*Governor Hoard.
*Great American.
*Great Pacific.
*Greenville.
*Hatfield.
Haverland.
Jessie.
*Lady Rusk.
*Leader.
*Little's No. 44.
*Lovett.
*Martha.
*Michel's Early.
*Middlefield.
*Moore's Early.
*Mrs. Cleveland.
*Parker Earle.
*Saunders.
*Sellette.
*Seneca Queen.
*Shaw.
*Southard.
*Swindle.
*Timbrell.
*Warfield.
Williams.
Wilson.
*Woodruff.
*Woolverton.

WENTWORTH EXPERIMENT STATION.

Specialty—Grapes. Experimenter—M. Pettit, Winona, Ont.

CHERRIES.

*Bessarabia.
*Black Heart.
*Black Tartarian.
*Buttner's Yellow.
*Early Purple.
*Early Richmond.
*Governor Wood.
*May Duke.
*Montmorency Ordinaire.
*Napoleon Bigarreau.
*Ostheim.
*Reine Hortense.
*Vladimir.
*Windsor.
*Yellow Spanish.

Grapes.

Adirondac.
Agawan.
Alvah.
Amber.
Amber Queen.
Aminia.
*Arnold.
August Giant.
*Bacchus.
Barry.
Black Delaware
Black Eagle.
Black Pearl.
Brighton.
Canada.
Catawba.
Centennial.
Champion.
Clinton.
Concord.
*Concord Chasselas.
*Concord Muscadine.
Cottage.
Creveling.
*Croton.
*Cynthiana.
Delaware.
Diana.
Dracut Amber.
Duchess.
Early Dawn.
Early Victor.
Eaton.
Eldorado.
Elvira.
Empire State.
Essex.
*Esther.
*Etta.
Eumelen.
Eva.
*F. B. Hayes.
Florence.
*Geneva.
Goethe.
*Green Mountain.
*Grein's Golden.
Hartford Prolific.
Herbert.
Herman.
Highland.
Iona.
Isabella.
Ives.
Jamesville.
Jefferson.
Jessica.
Lady.
Lady Washington.
Lindley.
*Marion.
Martha.
Massisoit.
*Maxatawney.
Merriam.
Merrimac.
*Mills.
*Missouri Riesling
Monroe.
*Montefiore.
*Montgomery.
Moore's Diamond.
Moore's Early.
Moyer.
Niagara.
Noah.
Northern Muscadine.
Norton's Virginia.
Oneida.
Oriental.
Pearl.
Perkins.
Pocklington.
Prentiss.
Rebecca.
Rentz.
Requa.
*Rockwood.
Rogers 7.
Rogers 13.
*Rogers 28.
Rogers 30.
Rogers 32.
Rogers 34.
Salem.
Senasqua.
Taylor.
*Transparent.
Triumph.
*Ulster.
Ulster Prolific.
Vergennes.
*Victoria.
*Walter.
White Ann Arbor.
Wilder.
*Woodruff Red.
Worden.
Wyoming Red.

Blackberries.

Kitattinny.
Snyder.

Currants.

*Black Naples.
*Champion.
*Fay's Prolific.
*Lee's Prolific.
*North Star.
*Red Cherry.
*Saunders.
*Versailles.
*White Grape.

Gooseberries.

*Downing.
*Houghton.
Industry.
Pearl.
Smith's Improved.

Peaches.

*Alexander.
*Bowslaugh or Longhurst.
*Carlisle.
*Crosby.
*Early Canada.
*Early Rivers.
*Early Richmond.
*Early St. John.
*Elberta.
*Foster.
*Killborn.
*Honest John.
*Hyne's Surprise.
*Jersey Pride.
*Late Crawford.
*Michigan No.1.
*Michigan No. 2.
*Michigan No. 3.
*Mountain Rose.
*Old Mixon.
*Pratt.
*Smith's Late.
*Smock.
*Stephen's Rareripe.
*Wager.
*Willetts.
*Yellow Rareripe.

Pears.

Anjou.
Bartlett.
Beurre Giffard.
Clapp's Favorite.
Duchess.
Flemish Beauty.
Kieffer.
Leconte.
Sheldon.

PLUMS.

*Arch Duke.
*Black Diamond.
Bradshaw.
Coe's Golden Syrup.
Duane's Purple.
General Hand.
German Prune.
*Grand Duke.
*Gueii.
*H R. P. Egg.
Lombard.
*Monarch.
*Peter's Gage.
Pond's Seedling.
*Prince of Wales.
*Prince's Yellow Egg.
*Quackenbos.
Reine Claude.
*Rochester German Prune.
*Shipper's Pride.
*Stanton.
*Union Purple.
Washington.
Yellow Egg.

RASPBERRIES.

*Caroline.
*Cuthbert.
*Golden Queen.
*Marlboro.
*Superlative.
*Turner.

STRAWBERRIES.

*Auburn.
*Bubach.
*Bubach 24.
*Enhance.
*Eureka.
*Great American.
*Great Pacific.
Hatfield.
Haverland.
*Lady Rusk.
*Little's 44.
*Martha.
*Michel's Early.
*Moore's Early.
*Mrs. Cleveland.
*Selette.
*Saunders.
*Shaw.
Warfield.
Williams.
Wilson.
Woolverton.

SOUTHWESTERN EXPERIMENT STATION.

Specialties—Peaches and Strawberries. Experimenter—W. W. Hillborn, Leamington, Ont.

PEACHES.

Alexander.
Allen.
Barnard Early.
Barnard Late.
Boyle's Yellow.
Brandywine.
Brigden.
Brunson.
Chair's Choice.
Champion.
Cleffey's Allen.
Corner.
Crane's Yellow.
Crawford Early.
Crawford Late.
Crosby.
Diamond.
Dumont.
Early Canada.
Early River.
Early Toledo.
Elberta.
Ellison.
Engol's Mammoth.
Fitzgerald.
Foster.
Fox's Seedling.
Frankford.
Globe.
Golden Drop.
Hale's Early.
Hill's Chili.
Hinman.
Hortense Rivers.
Jacques Rareripe.
*Jersey Pride.
La Fleur.
Lemon Free.
Lewis' Seedling.
Longhurst.
Marshall's Late.
Moore's Favorite.
Mountain Rose.
McCollister.
New Prolific.
Old Mixon.
Richmond Late.
Salway.
Shipley.
Smock.
Smock Beers.
Snow's Orange.
Southwick.
Stephen's Rareripe.
Stump.
St. John.
Switzerland.
Susquehanna.
Tyhurst Seedling.
Wager.
Wheatland.
Wilder.
Wonderful.
Yellow Rareripe.

CHERRIES.

Belle Magnifique.
Black Tartarian.
Early Richmond.
Empress Eugenie.
Governor Wood.
Great Bigarreau.
May Duke.
Ostheim.
Reine Hortense.
Rockport.
Windsor.
Wragg.

CURRANTS.

Black Champion.
Cherry.
Fay's.
Lee's Prolific.
*North Star.
Prince Albert.
Raby Castle.
Seedling (New).
White Grape.

GOOSEBERRIES.

Downing.
Industry.
Smith's Improved.
Whitesmith.

STRAWBERRIES.

Barton's Eclipse.
Beder Wood.
*Beverly.
Bubach.
Cameronian.
Captain Jack.
Cloud.
Crawford.
Crescent.
Cumberland.
Daisy.
Edgar Queen.
*E. P. Roe.
Eureka.
Farnsworth.
Felton.
Florence.
Gandy.
General Putman.
Governor Hoard.
Great Prolific.
*Greenville.
Hatfield.
Haverland.
*Henry Ward Beecher.
*Iowa Beauty.
Jessica.
*Jucunda Imperial.
*Kentucky.
Lady Rusk.
Leader.
Lovett.
Manchester.
Martha.
*Mary.
*Maxwell.
Meek's Early.
*Michel's Early.
Middlefield.
Mitchell's Early.
Mrs. Cleveland.
Mt. Holyoke.
*Omega.
Osceola.
Parker Earle.
Pearl.
*Phillip's Seedling.
Sadie.
Saunders.
Seneca Queen.
*Shuckless.
*Shuster's Gem.
*Smith's Seedling.
*Southard.
Swindle.
Timbrell.
*VanDeman.
*Victor Hugo.
Walton.
*White Novelty.
Williams.
Wilson.
Woodruff.
Woolverton.
Yale.

RASPBERRIES.

Brandywine.
Cuthbert.
Golden Queen.
Gregg.
Heebner.
Hilborn.
Kansas.
Marlboro'.
Shaffer's Colossal.
*Superlative.
Tyler.

MAPLEHURST FRUIT FARM.

(The Private Experimental Grounds of the Secretary, situated at Grimsby, Ont.

APPLES.

Alexander.
American Golden Russett.
Baldwin.
Beauty of Kent.
Ben Davis.
Blenheim Pippin.
Blue Pearmain.
Brodie's Seedling.
Cabashea.
Canada Baldwin.
Canada Red.
Cayuga Red Streak.
Colvert.
Cranberry Pippin.
Crystal White.
Detroit Black.
Duchess of Oldenburg.
Early Harvest.
Early Strawberry.
Esopus Spitzenburg.
Faliawater.
Fall Pippin.
Fall Queen.
Fameuse.
Fameuse Sucre.
Flushing Spitzenburg.
Gibb Crab.
Gloria Mundi.
Golden Russet.
Golden Russet (English).
Golden White.
Gravenstein.
Grimes Golden.
Haas.
Hibernal.
Holland Pippin.
Hubbardston's Nonsuch.
Kean's Seedling.
Keswick Codlin.
King of Tompkins Co.
La Rue.
Longfield.
Mann.
Maiden's Blush.
McIntosh Red.
Newtown Spitzenburg.
Northern Spy.
Porter.
Princess Louise.
Rambo.
Red Anis.
Red Astrachan.
Red Bietigheimer.
Red Russet.
Reynard.
Rhode Island Greening.
Ribston Pippin.
Roxbury Russet.
Sara Synap.
Shiawassee Beauty.
Snow.
St. Lawrence.
Stone Antonovka.
Swaar.
Swazie Pomme Grise.
Talman Sweet.
Tetofsky.
Titovka.
Twenty Ounce Pippin.
Vandevere.
Wagener.
Wallbridge.
Wealthy.
Yellow Anis.
Yellow Belleflower.
Yellow Transparent.

APRICOTS.

Russian.

BLACKBERRIES.

Early Harvest.
Erie.
Kittatinny.
Mammoth Cluster.
Snyder.
Souhegan.
Stone's Hardy.

Cherries.

American Amber.
Belle de Choisy.
Belle Magnifique.
Black Eagle.
Black Tartarian.
Buttner Yellow.
Dyehouse.
Early Purple.
Early Purple Guigne.
Early Richmond.
Elkhorn.
Elton.
English Morello.
Governor Wood.
Knight's Early Black.
Late Duke.
Late Kentish.
Leib.
Louie Phillipp.
May Duke.
Montmorency.
Montmorency Ordinaire.
Napoleon Bigarreau.
Reine Hortense.
Rockport Bigarreau.
Starr's Prolific.
Vladimir.
Windsor.
Wragg.
Yellow Spanish.

Currants.

Black Naples.
Cherry.
Fay's Prolific.
Greenfield Red.
Lee's Prolific.
Versailles.
Victoria.

Dewberries.

Lucretia.

Gooseberries.

Carnie.
Conn.
Crosby's Seedling.
Downing.
Industry.
Ottawa.
Pearl.
Smith's Improved.
Sutherland's Seedling
Whitesmith.

Grapes.

Adirondac.
Agawam.
Allan's Hybrid.
Amber.
Aminia.
Amber Queen.
August Giant.
Autuchon.
Bacchus.
Barry.
Black Eagle.
Black Pearl.
Brant.
Brighton.
Burnet.
Canada.
Catawba.
Champion.
Concord.
Concord Muscat.
Cornucopia.
Cottage.
Creveling.
Croton.
Delaware.
Diana.
Dracut Amber.
Duchess.
Early Victor.
Eldorado.
Empire State.
Etta.
Eumelen.
Faith.
F. B. Hayes.
Goethe.
Hartford.
Iona.
Israella.
Ives.
Janesville.
Jefferson.
Jessica.
Lady.
Lady Washington.
Lindley.
Marmion.
Martha.
Mary.
Massasoit.
Merrimac.
Mills.
Missouri Riesling.
Moore's Diamond.
Montefiore.
Naomi.
Niagara.
Noah.
Norfolk.
Northern Muscadine.
Norton.
Oneida.
Oriental.
Othello.
Pearl.
Perkins.
Pocklington.
Poughkeepsie.
Prentiss.
Rebecca.
Rogers 3.
Rogers 9 (Salem).
Rogers 11.
Rogers 15.
Rogers 19.
Rogers 28.
Rogers 30.
Rogers 32.
Rogers 43.
Rogers 44
Telegraph.
To Kalon.
Transparent.
Ulster Prolific.
Vergennes.
Victoria.
Wilder.
Woodruff Red.
Worden.
Wyoming Red.

Peaches.

Alexander.
Beatrice.
Bowslaugh Late.
Centennial.
Cooledge's Favorite.
Conkling.
Christiana.
Crawford.
Early Canada.
Early Crawford.
Early Richmond.
Early Rivers.
Elate.
Elberta.
Foster.
Hale's Early.
Hillborn.
Hill's Chili.
Honest John.
Lemon Cling.
Louise.
Lord Palmerston.
May's Choice.
Michigan.
Mountain Rose.
Old Mixon.
Pineapple.
Richmond.
Salway.
Schumacker.
Scott's Seedling.
Smith's Improved.
Smock.
Steven's Rareripe.
Troth's Early.
Wager.
Waterloo.
Wheatland.
Willets.
Wonderful.
Yellow St. John.

PEARS.

Ananas d'Ete.
Bartlett.
Belle Lucrative.
Beurre Assumption.
Beurre Bosc.
Beurre Brown.
Beurre d'Anjou.
Beurre Diel.
Beurre Giffard.
Beurre Easter.
Beurre Hardy.
Beurre Livonia.
Beurre Superfin.
Brandywine.
Buffum Chambers.
Clapp's Favorite.
Clairgeau.
Dana's Hovey.
Dearborn.
Doyenne.
Doyenne Boussock.
Doyenne Grey.
Doyenne d'Ete.
Doyenne White.
Duchess d'Angouleme.
Flemish Beauty.
Frederick Clapp.
Goodale.
Glout Morceau.
Howell.
Josephine de Malines.
Kieffer.
Kirkland.
Kooschtinska.
Lawrence.
Leconte.
Louise Bonne.
Madeline.
Manning's Elizabeth.
Medviedka.
Mount Vernon.
Onondaga.
Osband's Summer.
Petite Marguerite.
Prest. Drumard.
Princess.
Reeder.
Rostiezer.
Sapieganga.
Sheldon.
Seckel.
Souvenir de Congress.
St. Lawrence.
Summer Belle.
Swan's Orange.
Triumphe de Vienne.
Tyson.
Urbaniste.
Vicar.
Victoria.
Winter Nelis.

PLUMS.

Abundance.
*Arch Duke.
Baker German Prune.
Bassett's American.
Black Diamond.
Bradshaw.
*Burbank.
Caraduc.
Coe's Late Red.
*Czar.
Damson.
Duane's Purple.
Field.
French Prune.
General Hand.
German Prune.
Glass Seedling.
*Grand Duke.
Green Gage.
*H. R. Purple Egg.
Imperial Gage.
Jefferson.
Lombard.
Middleburg.
Moore's Arctic.
Monarch.
Niagara.
Peter's Gage.
Pond's Seedling.
*Prince of Wales.
*Prince's Yellow Gage.
Prunus Simoni.
Purple Egg.
Quackenbos.
Reine Claude de Bavay.
Rochester German Prune.
*Shipper's Pride.
Shropshire Damson.
Stanton.
*Union Purple.
Weaver.
Yellow Egg.

QUINCES.

Orange.
Champion.
Angers.

RASPBERRIES.

Brinkle's Orange.
Cuthbert.
Cardine.
Diadem.
Gregg.
Golden Queen.
Marlboro'.
*Sarah.
Shaffer's Colossal.
*Superlative.
Turner.

STRAWBERRIES.

Auburn.
Belmont.
Bessie.
Big Bob.
Boynton.
Bubach.
Bubach 24.
Burt.
Captain Jack.
*Caughell's No. 2.
Chamberlain.
Cloud.
Covil.
Cumberland Triumph.
Downing.
Early Canada.
Enhance.
Eureka.
Finch Prolific.
Florence.
Gardy's Prize.
Gillespie.
Glendale.
Gold.
Great American.
Great Pacific.
Haverland.
Hatfield.
Henderson.
Itasca.
Jessie.
Jewell.
Lady Rusk.
Laxton's Noble.
Lida.
Little's 10.
Little's 44.
Logan.
Louden's 15.
Manchester.
Mary Fletcher.
May King.
Michel's Early.
Monarch.
Moore's Early.
Mrs. Cleveland.
Mrs. Garfield.
Mt. Holyoke.
Old Ironclad.
Ohio.
Ontario.
Parry.
Pineapple.
Saltelle.
Saunders.
Seneca Queen.
Sharpless.
Shaw.
Stayman.
Sucker State.
Summit.
Warfield.
Williams.
Wilson.
Woolverton.
Wood.

REPORT OF BAY OF QUINTE EXPERIMENT STATION.—W. H. Dempsey, Trenton, Experimenter.

APPLES.—Descriptive List.

Number.	Variety.	Origin.	Tree.						Fruit.		
			Habit.	Foliage.	Vigor, scale 1-10.	Hardiness, scale 1-10.	Productiveness, scale 1-10.	Age of bearing.	Size.	Form.	Color of skin.
1	Albury	Albury, Prince Edward	S	wide	8	10	6	8	L	round, ovate	yellow.
2	Alexander	Russia, in England by J. M. Lee, 1817.	S	large, wide, glossy.	10	10	8	6	L	round, ovate, conical.	greenish-yellow, russet dots, streaked with red or splashed.
3	Benoni	Dedham, Mass	U S	medium	8	10	8	10	M	oblate, conical	rich yellow, blushed with red in sun.
4	Ben Davis	America	S		8	10	10	5	M L	roundish, ovate.	yellow striped and splashed with red.
5	Baldwin	Massachusetts	S	large	6	7	8	10	L	roundish	yellow shaded, splashed with crimson and red.
6	Beauty of Kent	England	S	large	10	10	8	8	L	roundish, ovate.	yellow tinged with green shaded with red.
7	Bailey Sweet	New York State	S	medium	6	8	8	6	L	roundish, conical	yellow shaded with red, russet dots.
8	Blenheim Pippin	Woodstock, Oxfordshire, England.	U S	large, heavy	10	10	10	10	L	round, oblate	orange-yellow streaked and splashed with red, large russet dots.
9	Cabashea		U S	large, heavy	10	10	5	10	L	round, oblate	yellow striped and splashed with dull red.
10	Canada Baldwin	Quebec	S	curled	8	9	10	8	M	ovate	yellow broken strips and splashes of red, numerous russet dots.
11	Duchess	Russia	S	large, heavy	10	10	10	5	L	round, oblate	yellow splashed with light red in sun.
12	Fallawater	Pennsylvania	S		10	10	5	10	L	round, ovate	greenish-yellow shaded with a dull red and few large whitish dots.
13	Fameuse	Canada	S	medium, light, green.	8	8	10	6	M	round, oblate	yellow tinged with pale red and dark red in sun.
14	Fall Queen (Haas)	Kentucky	U S	large, good	8	8	8	6	M	oblate, conical	yellow striped with crimson, covered with white dots.
15	Grand Sultan	Russia, in England by Mr. John Cott, 1864.	U	large, heavy	10	10	8	6	L	ovate	whitish-yellow striped and splashed with red in sun.
16	Hawthornden (old)	Edinburgh, Scotland	S	small	7	8	8	6	M	round, ovate	yellow.
17	Hawthornden (new)	" "	S	large, glossy	8	8	8	6	L	round, ovate	yellow with a crimson blush in sun.
18	Hurlbut	Connecticut	S	medium	7	9	7	8	L	round, oblate	yellow striped and splashed with red in sun, numerous small russet dots.
19	Lord Suffield	England	S	medium	6	8	9	8	M	conical, ovate	pale greenish-yellow, slightly tinged with red in sun.
20	Margil	France	D	small, light	6	7	9	5	S	ovate	orange streaked with deep red and nearly covered on one side with russet.
21	Northern Spy	New York State	U	large, glossy	10	8	10	14	L	roundish, conical	yellow striped and splashed with red in sun.
22	Mother	Massachusetts	U	medium	5	7	7	7	M	oblong, ovate, ribbed.	yellow covered with a rich red, a deep red in sun.
23	Ontario	Chas. Arnold, Paris, Ont. (Spy and Wagener).	U	large, good	8	9	10	5	L	oblate	yellow splashed and sprinkled with red or crimson in sun, covered with a rich bloom.

REPORT OF BAY OF QUINTE EXPERIMENT STATION.—*Concluded.*

APPLES.—Descriptive List.

Number.	Cavity.	Fruit. Stem.	Basin.	Calyx.	Core.	Flesh. Color.	Texture.	Flavor.	Season. (Months of use.)	Quality, scale 1-10. Dessert.	Cooking.	Value, scale 1-10. Home market.	Foreign market.
1	D	¾ inch	broad	partly open	ovate	white	buttery	sub-acid	Aug.—Sept.	6	6	4	....
2	D	1	deep, even	large open	large, oblate	yellowish white	crisp	sub-acid	Aug.—Oct	4	9	9	9
3	D	½	small	erect, partly closed	oblate, conical.	yellow	tender	rich sub-acid	July—Sept	10	8	4	7
4	D	1 to 1½	deep	erect, partly closed		white	tender	mild sub-acid	Mar.—May	4	6	6	9
5	B	¾, heavy	deep, plaited	closed		yellowish white	tender	sub-acid	Jan.—Mar.	4	6	8	8
6	D	¾, ¾	narrow	small, closed	large, oblate	greenish white	tender	sub acid	Oct.—Nov	4	6	8	8
7	N	1	narrow	closed	oblate	yellowish white	tender	sweet	Nov.—Mar.	4	8	4	4
8	B	½	broad	open	ovate, medium.	yellow	breaking	sub-acid	Nov.—Mar	6	7	9	9
9	N	1	broad	open	oblate	whitish yellow	crisp	sub-acid	Dec.—Feb	2	6	6	6
10	N	½, ¾	broad	closed	oblate	whitish yellow	crisp	mild sub-acid	Dec.—Mar.	6	8	8	....
11	D	1	deep	partly closed	ovate	white	crisp	sub-acid	Aug.—Sept.	6	9	10	9
12	N	¾, ¾	small	open	ovate	greenish white	crisp	mild sub-acid	Jan.—Mar	6	8	8	9
13	D	½, slender	shallow	small, half open.	ovate	white	tender, juicy.	sub-acid	Sept.—Dec	10	8	10	8
14	D	½	large	half open	ovate	yellowish white	tender	acid	Sept.—Nov.	5	6	6	6
15	D	½	wrinkled	open	oblate	white	buttery	acid	Aug.—Sept.	5	8	6	6
16	D	1	wide	open	ovate	white	crisp	acid	Sept.—Nov.	5	7	5	7
17	B	½	broad	half open	small, ovate	white	crisp	sub-acid	Oct.—Dec	7	7	8	8
18	D	½	broad, plaited	closed	small, ovate	white	breaking	mild sub-acid	Dec.—Feb	8	8	8	8
19	D	½	broad, plaited	small, closed	ovate	white	tender	sub-acid	Aug.—Sept.	4	7	5	5
20	D	½	angular	closed	ovate	yellow	breaking	spicy, mild sub-acid.	Nov.—Jan.	10	8	7	7
21	D	½	deep	partly closed	large, ovate	yellowish white	breaking	rich sub-acid	Jan.—Mar.	9	9	9	9
22	S	½	small, plaited	closed	ovate	yellow	breaking	spicy, mild sub-acid.	Nov.—Jan	10	8	7	7
23	D	½	deep, even	closed	medium, ovate.	white	breaking	sub-acid	Jan.—Mar.	9	9	9	9

Origin : Originator, place, date, parentage. *Habit :* S, Spreading ; U, Upright ; D, Drooping. *Stem :* Length ; tenacity to tree.
Foliage : Subject to diseases, size, glossiness, quantity. *Cavity :* S, Shallow ; N, Narrow ; D, Deep ; B, Broad. *Core :* Shape and size of segments.
Size : S, Small, less than 1½ inches in diameter ; M, Medium, 1½ to 3½ inches in diameter ; L, Large, over 3½ inches in diameter.

PEARS.—Descriptive List.

Number.	Variety.	Origin.	Tree.						Fruit.		
			Habit.	Foliage.	Vigor, scale 1-10.	Hardiness, scale 1-10.	Productiveness, scale 1-10.	Age of bearing in years.	Size.	Form.	Color of skin.
1	Annanas d' Ete...	Holland	U	medium light green	8	6	4	10	2½x2	obtuse pyriform	yellowish-green with a brownish tinge on side next to sun.
2	Bartlett, named after E. Bartlett. near Boston	England, originated about 1770 by Mr. Weeler, Aldermaster, Berwickshire	U	narrow folded..	8	6	9	6	3x2½	oblong, obtuse pyriform	clear yellow, sometimes a little blush in sun.
3	Belle Lucrative.....	Belgium.....	U	medium	8	8	8	8	2½x2	conic obovate..	lemon yellow, sometimes green.
4	Beurre Clairgeau	Nantes, in Rue de Bastelle, by Mr. Clairgeau	U	heavy	8	6	8	10	3x2½	ovate pyriform.	yellow, or yellowish-brown.
5	Beurre d' Anjou.....	France.....	S	waved, curled, light green .	10	10	6	10	3x2½	obtuse pyriform.	greenish-yellow with a brown cheek next the sun covered with small russet dots.
6	Beurre Gris d' Hiver...	France	U	curled, large..	10	10	8	10	2½x2½	obovate	greenish russet.
7	Beurre Hardy.....	.....	U	good, large, heavy	10	10	10	6	3x2½	obovate, obtuse pyriform	yellow, covered with thin brown russet.
8	Buffum	Rhode Island..... ..	U	large, good....	10	10	10	8	2½x2	oblong, obovate	yellow, with a brown cheek.
9	Boussock.....	Belgium.....	U S	very h'vy, thick	10	10	10	8	3½x3	obovate	lemon yellow, sprinkled with russet dots.
10	Clapp's Favorite... .	Seedling raised by Thaddeus Clapp, Dorchester, Mass.	U S	medium	10	8	10	6	3x3	pyriform	yellow, shaded with red.
11	General Totleben.....	Belgium, Mr. M. Fontaine, Gheling, 1855..	U S	curled.....	8	9	8	10	4x3	obovate, obtuse pyriform	yellow, with russet dots on patches of russet or brown.
12	Josephine de Malines..	Raised by Major Esperen, of Malines, in 1830, and named in compliment of his wife . ..	S D	small, curled...	8	9	9	8	2½x3	roundish oblate	green, turning yellow, with a little flush of red next the sun, large russet dots.

REPORT OF BAY OF QUINTE EXPERIMENT STATION.—*Concluded.*

PEARS.—Descriptive List.

Number.	Cavity.	Fruit. Stem.	Basin.	Calyx.	Core.	Flesh. Color.	Texture.	Flavor.	Season. (Month of use as Dec. March)	Quality, scale 1-10. Dessert.	Cooking.	Value scale 1-10. Home market.
1	S	1½.	shallow	partly open....	ovate	white	buttery	sweet, stringent ...	Aug.—Sept ...	4	4	5
2	S	1, stout ...	very shallow...	open	ovate	white	buttery, melting ...	musky aroma, sub-acid.....	September	9	9	10
3	S	1¼.	shallow	open	ovate	white	tender, very juicy .	sweet	Sept.—Oct . ..	8	8	8
4	S	½ to 1	shallow	open	.....	white	granular.....	poor	Nov.—Dec	4	6	8
5	S	½ to ¾	shallow	open	obtuse	white	buttery, melting ...	sub-acid.....	Nov.—Jan	8	8	10
6	S	½, thick....	small	large, open....	ovate	white	granular.....	sub acid.....	March	4	4	4
7	S	¾ to 1	small, uneven .	open	obtuse	white	buttery, melting ...	sub-acid.....	Sept.—Oct	8	8	9
8	S	¾.....	small	half open.....	ovate	greenish white.	buttery	sweet	October	4	4	4
9	S	¾....	shallow, even..	open	ovate	white	melting, juicy	sub-acid.....	Sept.—Oct. ...	8	9	9
10	S	½, thick ...	small, wrinkled	partly closed ..	.....	white	juicy, melting	sub-acid.....	Aug.—Sept ...	8	8	9
11	S	2.....	wide, furrowed.	open	small, ovate ...	rosy tinge	melting, juicy, slightly granulated....	mild, sub-acid	Nov.—Dec	10	8	8
12	N	1, stout ...	shallow	open	small, ovate ...	rosy tinge	melting, juicy	sugary, with a rich aroma.....	Dec.—Mar.....	10	8	8

Origin: Originator, place, date, parentage. *Habit:* S, Spreading; U, Upright; D, Drooping. *Stem:* Length; tenacity to tree.
Foliage: Subject to diseases, size, glossiness, quantity. *Cavity:* S, Shallow; N, Narrow; D, Deep; B, Broad. *Core:* Shape and size of segments.
Size: S, Small, less than 1½ inches in diameter; M, Medium, 1½ to 3½ inches in diameter; L, Large, over 3½ inches in diameter; average length and breadth in inches.

BAY OF QUINTE STATION. RECORD OF EXPERIMENTS 1894.

APPLES.

Variety.	Origin.	When planted.	Date of pruning.	Thinning—per cent., by hand or accident.	Date of gathering.	Yield.	Grade. Class 1.	Grade. Class 2.	Grade. Class 3.	Average price per bbl.
				Bush.						$ c.
*Albury	Albury, Ont	1888	March		Sept	1 bush.	7/8	1/8	....	.....
*Alexander	Russian	1878	"		"	4 bush.	3½	½	½	2 00
Benoni	Massachusetts	1880	"		"	4½ bush.	3½	½	½	.....
Ben Davis	.....	1880	April	1	Oct 16.	5 bbls.	4	1	....	.....
Baldwin	.....	1874	"	....	" 16	3 bbls.	2½	½	....	...
Duchess	Russia	1890	March	1½	Aug. 18-25 Sept. 1	3 bbls.	3	....	....	1 75
Fallawater	.....	1878	"	2¾	Oct	1 bush.	¾	¼	¼	.....
Fameuse	Canada	1890	April	1	" 8	5½ bbls.	5	⅓	⅓	2 50
Northern Spy	.....	1890	"	.....	" 9	4 bbls.	3	1	....	.....
†Ontario	Chas. Arnold, Paris, Ont., Spy X Wagener.	1890	"	.....	" 9	1 bbl.	1	....	....	.....

*Dwarf trees. †Bailey Sweet, grafted to Ontario four years ago.

The soil was a sandy loam, cultivated and fertilized with stable manure. The pruning was pyramidal. Apples were stored in cellar.

Notes on Varieties.

Apples.

I see many different opinions of the same apple, given in different districts. A great deal is said in favor of the *Canada Baldwin*; am sorry it does not succeed with me, subject to spot; more so than the Snow; it has been fruiting seven years and has been only clean one year. It is of fine flavor, productive and attractive, when clean.

Winter St. Lawrence will be a profitable apple. It is larger than the fall St. Lawrence and of nearly the same appearance and flavor, but not so subject to crack and spot; hardy and a good grower.

Mountain Beet and Mountain Tulip are more subject to spot than any other varieties yet fruiting.

La Rue seems to be nearly as late coming into bearing as Spy. It is a very upright grower, but the fruit was not desirable last year. It may improve as it gets age, or is grown on different soil.

Hubbardston None-such is a very profitable apple; more so than any other variety on light gravelly soil. It keeps through January and February.

Pewaukee is a large fine apple more productive than the King and as good. It requires rich soil; the fruit is subject to drop prematurely, the same as Fallawater.

Ontario is one of the most profitable apples we have. The tree is hardy, but bears too heavily to make much growth. My Ontario apples sold equal to Spys in Montreal.

Primate is a very desirable early apple for a small orchard on account of its unevenness in ripening, commencing to ripen with Red Astrachan and lasting through October. It is an excellent cooker and dessert apple; also *Seacliff's Hawthornden*, which can be grown in the same space as a currant bush. The fruit is large, round, lemon-colored, of good flavor and a good cooker.

Pears.

One of the most profitable pears grown here is Doyenne Boussock. It is not so early a bearer as Bartlett, but a more healthy tree and not so subject to blight. I have only seen one tree blighted yet. It ripens after Bartlett.

Mount Vernon is also healthy and productive. The fruit requires to be handled with great care to get it into market in good condition; a slight bruise will cause it to spoil in a short time.

Anjou is one of the finest winter pears. The tree is healthy but a shy bearer. I consider *Josephine* and *Lawrence* the most profitable of winter pears tested here, both heavy croppers and of fine flavor, but they are not so attractive in the market as Anjou.

Urbaniste is slow in coming into bearing, but is a very fine pear.

Outlines of Apples and Pears.

The outlines show the exact size, from samples grown at Bay of Quinte Fruit Experiment Station, Trenton, Ont.

Albury. (Fig. 1.) One of the oldest apples grown along the shores of Bay of Quinte where it orginated with one of the first settlers; not profitable compared with Duchess, ripens at the same time.

Arabka. (Fig. 2). Top-grafted in 1892, bore three apples this year, quality not very good, may improve as tree gets age.

Grand Sultan. (Fig. 3). Very productive, uneven in size, not so profitable as Duchess, ripens at same time.

Hawthornden (New). (Fig. 4.) Large fine apple, very productive, of better quality than Colvert and ripens about the same time or a little later.

Hawthorden (Old). (Fig. 5.) Very productive, good culinary apple.

Hurlbut. (Fig. 6.) Very even in size, productive, of good quality and attractive, worthy of testing.

Winter St. Lawrence. (Fig. 7.) Similar to fall St. Lawrence in color and flavor, but not of the same form. Not so subject to spot and crack, worthy of further testing.

Norcaster Spy. (Fig. 8.) A very attractive dessert apple of medium size, very productive, too tender for shipping.

Northfield Beauty. (Fig. 9.) One of the most attractive autumn apples I have, ripens in September, keeps firm through October, of fine quality and productive.

Beurre Gris d'Hiver. (Fig. 10.) Productive winter pear of good quality.

Lawrence. (Fig. 11.) One of the best winter dessert pears, free from blight and productive.

Mount Vernon. (Fig. 12.) Very productive, annual bearer, but does not carry to market good; will decay when perfectly hard and firm.

Swan's Orange. (Fig. 13.) A profitable autumn pear in years gone by, but I have others that are better in quality of the same season.

General Todleben. (Fig. 14.) Large, fine, of excellent quality, fully equal to Malines; little later in coming into bearing.

W. H. Dempsey, Experimenter.

Trenton, Ont.

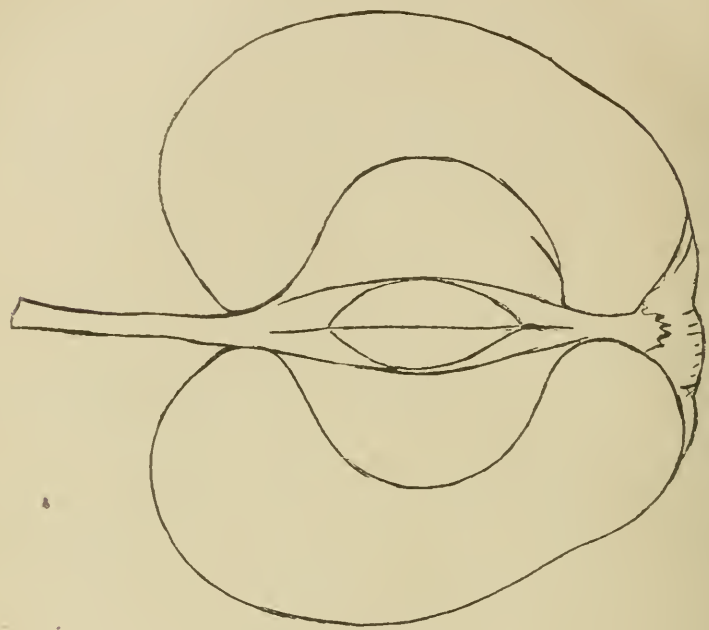


Fig. 2. Apple—Arabka.

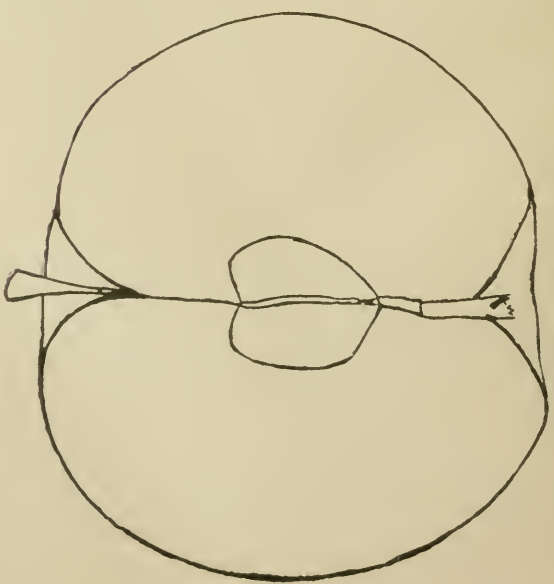


Fig. 1. Apple—Albury.

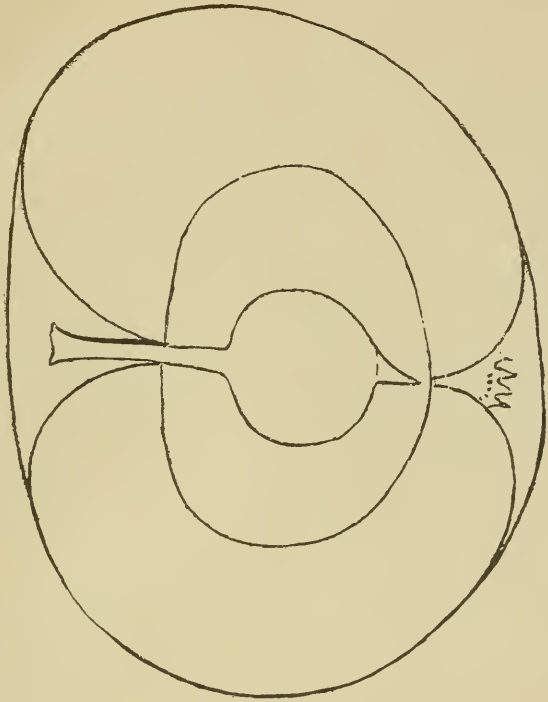


Fig. 4. Apple—Hawthornden (New).

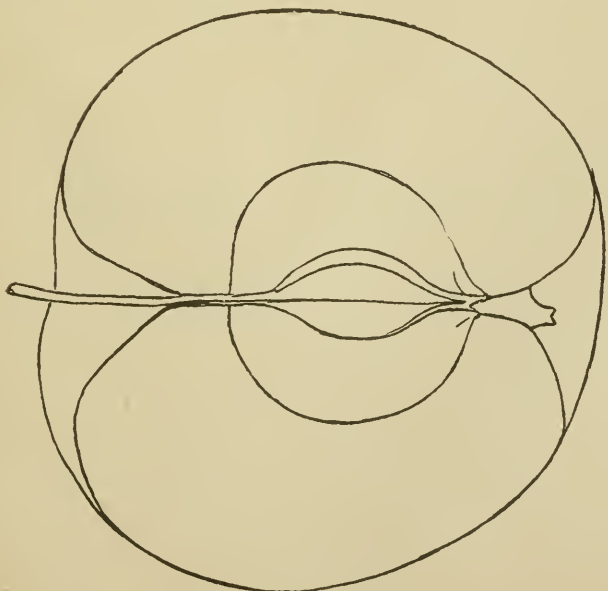


Fig. 3. Apple—Grand Sultan.

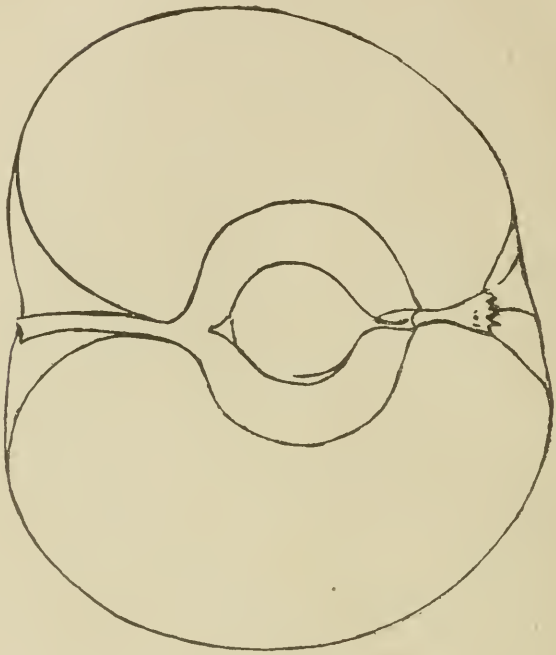


Fig. 6. Apple - Hurlbut.

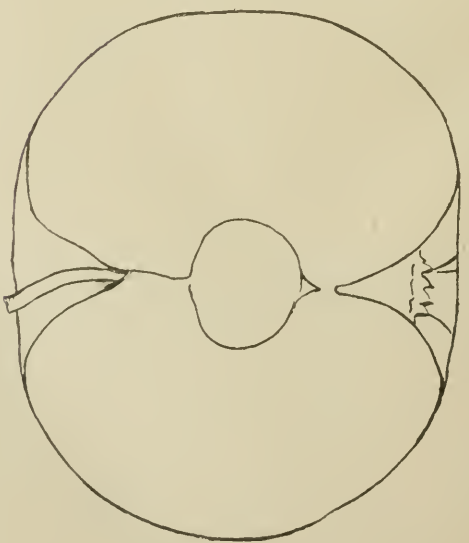


Fig. 5. Apple - Hawthorden (Old).

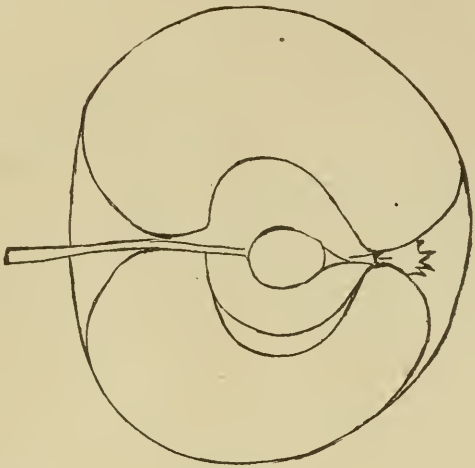


Fig. 8. Apple—Norcaster Spy.

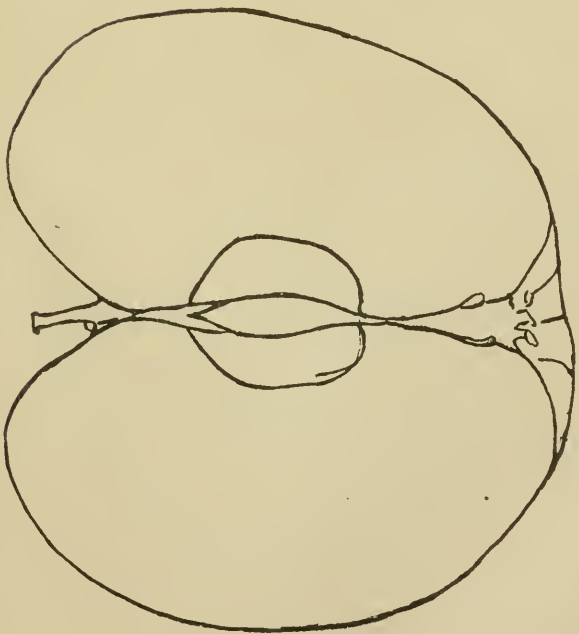


Fig. 7. Apple—Winter St. Lawrence.

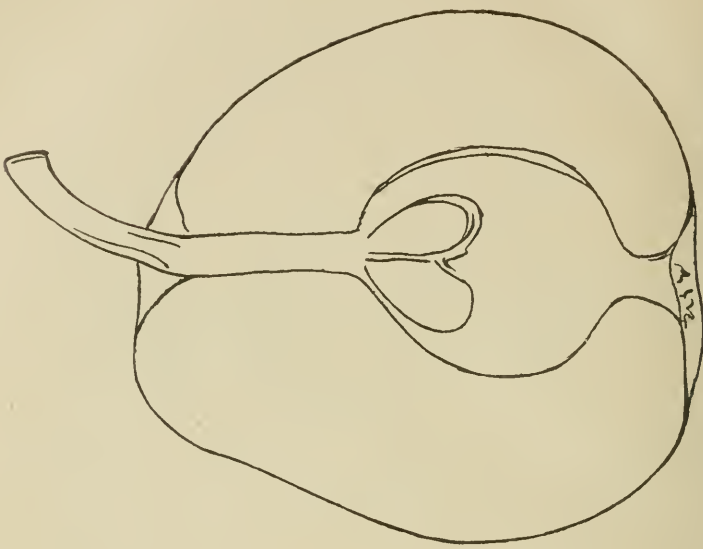


Fig. 10. Pear—Beurre Gris d'Hiver.

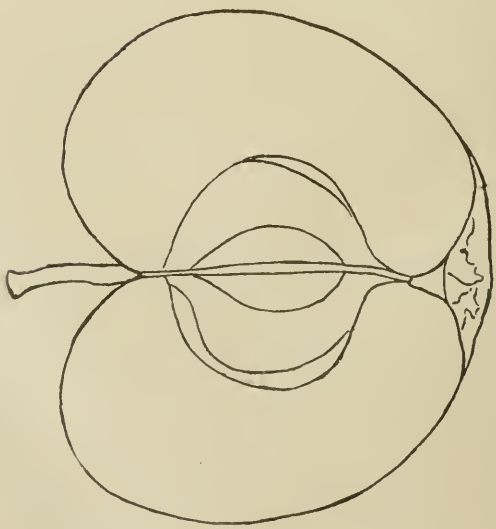


Fig. 9. Apple—Northfield Beauty.

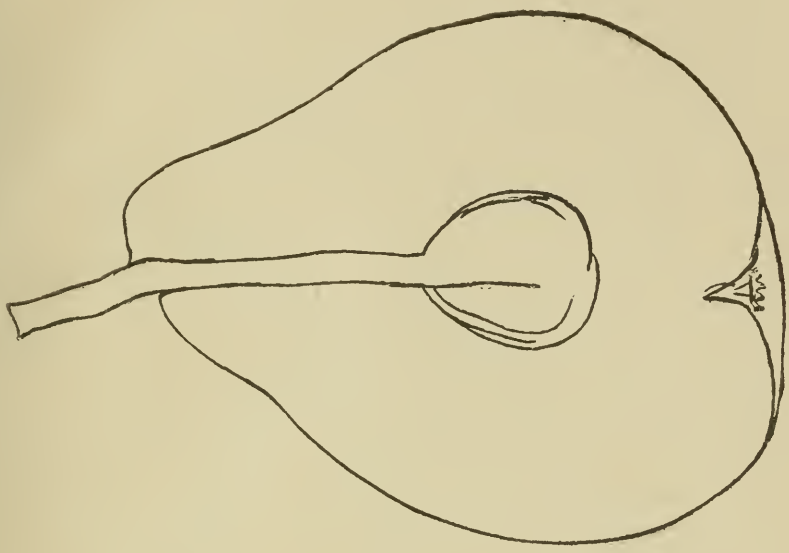


Fig. 12. Pear—Mount Vernon.

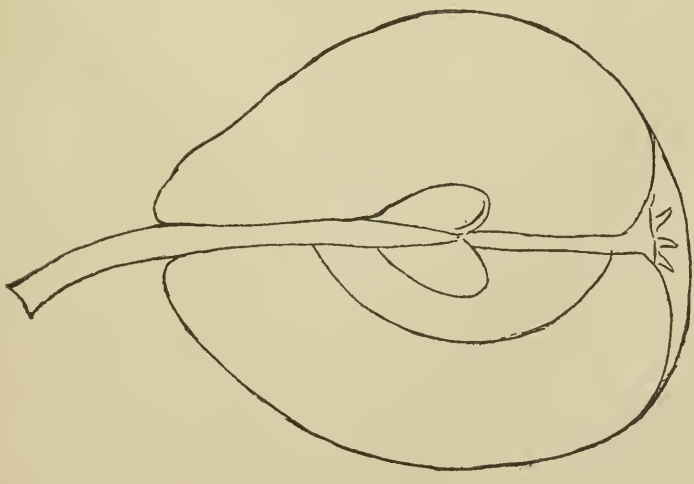


Fig. 11. Pear—Lawrence.

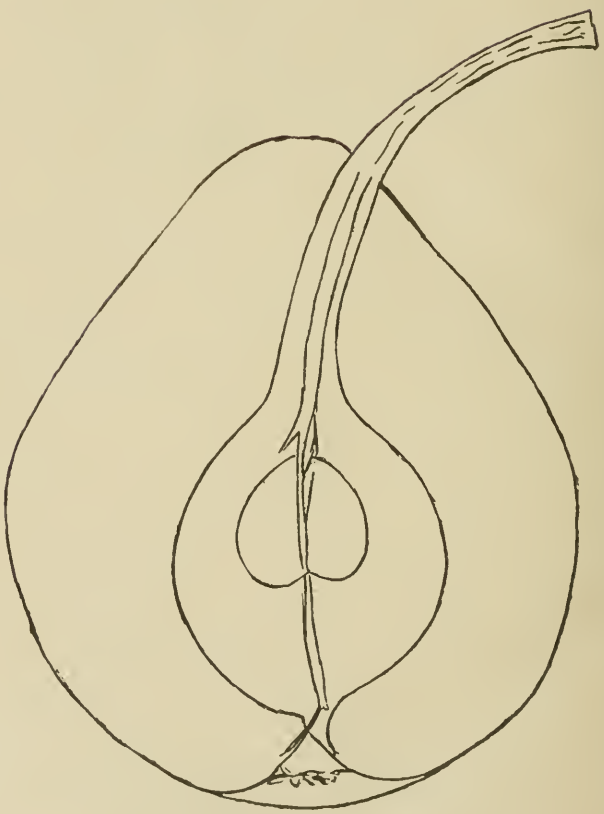


Fig. 13. Pear—Swan's Orange.

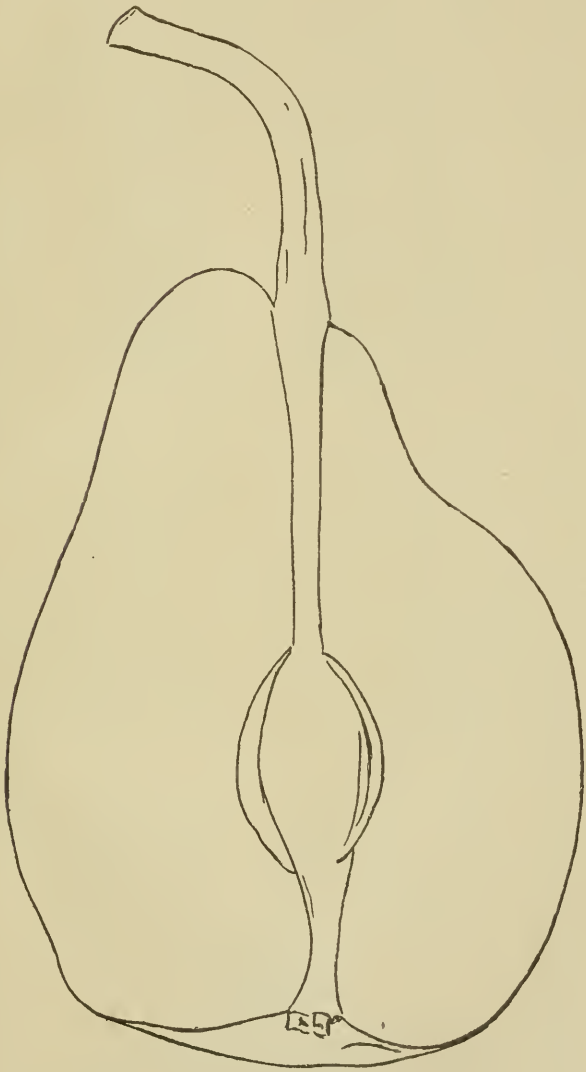


Fig. 14. Pear—General Todleben.

REPORT OF SIMCOE EXPERIMENT STATION.—G. C. Caston, Experimenter, Craighurst, Ontario.

APPLES.—Descriptive List.

Origin: Originator, place, date, parentage.
Foliage: Subject to diseases, size, glossiness, quantity.
Habit: S, Spreading; U, Upright; D, Drooping.
Size: S, Small, less than 1½ inches in diameter; M, Medium, 1½ to 3½ inches in diameter; L, Large, over 3½ inches in diameter.
Form: C, Conical; R C, Roundish Conical; R Ob, Roundish Oblate; R, Roundish.
Cavity: S, Shallow; N, Narrow; D, Deep; B, Broad; L, Large; irreg, irregular; reg, regular; W, Wide.
Stem: Length in inches.
Core: Shape and size of segments..

Variety.	Origin.	Tree.						Fruit.						
		Habit.	Foliage.	Vigor, scale 1-10.	Hardiness, scale 1-10.	Productiveness, scale 1-10.	Age of bearing.	Size.	Form.	Color of skin.	Cavity.	Basin.	Calyx.
							yrs.						
Alexander	Russia	S	healthy	10	10	10	7	L	C	greenish yellow, shaded with bright red	D	deep	large.
Astrachan, Red	Sweden to Engl'nd 1816, probably Russian origin	U	healthy	9	10	8	7	M	R C	red	M	slight	partly closed.
Baxter or La Rue.	Mr. La Rue, near Brockville, introduced by Mr. Baxter	U	healthy	9	10	8	8	L	R C	red	M		
Ben Davis	Missouri	U	medium	9	9	10	7	M	C	yellowish with two shades of red	N D rus't'd	wide, abrupt.	partly open.
Colvert		S	healthy	9	10	9	8	M-L	C ob	greenish-yellow splashed with red	M		
Duchess	Russia	S	healthy	10	10	10	3	M	R ob	yellow, streaked with red	S	wide, even	large, nearly closed.
Fameuse	Canada, probably France	S	subject to fungus	8	8	10	6	M	R ob	red	N f'n'l sh'ped	shallow, narrow	small.
Gideon	Russia	U	very clean & healthy	10	10	10	5	L	C	white with red cheek	M		
Grimes Golden	Thos. Grimes, Brooke Co., Virginia	U	medium	7	5	8	7	M	C	yellow, when ripe	M		
Haas		S	healthy	10	10	10	8	M	flat	red.			
Hurlbut	Gen. Hurlbut, Conn	S	healthy	8	9	8	9	M	R ob	yellow, red streaked with light dots	M	shallow	closed.
King of Tompkins	New Jersey	S		7	5	5	10	L	R	red	L irr'g	medium, slightly corrugated	small, closed.

APPLES.—Descriptive List.—*Continued.*

Variety.	Origin.	Tree.						Fruit.						
		Habit.	Foliage.	Vigor, scale 1-10.	Hardiness, scale 1-10.	Productiveness, scale 1-10.	Age of bearing.	Size.	Form.	Color of skin.	Cavity.	Basin.	Calyx.	
Maiden's Blush ...	New Jersey.....	S	healthy	9	10	10	8	M	flat	lemon yellow, with bright crimson cheek	D	.....	closed.	
Mann	New York State..	U	healthy	9	10	9	7	M	R obl.	green, turning yellow, with light and gray dots.....	M	large, slightly corrug'd...	closed.	
N. Spy	Near Rochester, N. Y.	U	healthy	9	7	9	13	M-L	R ob. C ...	red streaked.	wide D	narrrow, furrowed	small, closed.	
Pewaukee	S'dling of Duchess Pewaukee, Wis.	U	healthy	10	10	8	6	M	C	red streaked	M	....	small, closed.	
R. I. Greening....	.....	S	healthy	8	5	10	10	M	R ob	green.	M			
Ribston Pippin ...	Yorkshire, Eng..	M	healthy	8	8	8	7	M	R C	brownish russet, tinged with red.	wide	angular.....	small, closed.	
St. Lawrence	Uncertain	U S	healthy	9	10	10	8	M-L	Ob. C	streaked with red	L	small, deep ..	firmly closed.	
Talman Sweet....	Rhode Island....	U S	healthy	10	10	9	8	M	R	whitish yellow, sometimes with a blush line from stem to calyx	wide S	small, depressed.		
Tetovsky	Russia	U	healthy	9	10	9	4	M	Ob C	yellow, striped with red, slight bloom.				
Twenty Oz.	Cayuga, N. Y., from Conn	M	healthy	9	9	8	8	L	R ob. C....	red streaked.	W.D	D	small.	
Wealthy	Peter Gideon, St. Paul, Minn.....	S	healthy	9	10	10	3-4	M	R ob	whitish yellow, shaded with deep crimson.	green russet	deep, abrupt, uneven.	partly closed.	
Wagener	Penn Yan, N. Y.	S	healthy	8	9	8	8	M	R ob	yellow, nearly covered with crimson.	L B irreg.	abrupt, corrugated.	small, closed.	
Yellow Tr'sparent	Russia.....	U	healthy	10	10	8	4-5	L	.....	yellow.				

APPLES.—Descriptive List.—*Continued.*

Variety.	Fruit. Flesh. Color.	Texture.	Flavor.	Season. (Months of use as Dec.-March.)	Quality. Scale 1-10. Dessert.	Cooking.	Value. Scale 1-10. Home market.	Foreign market.	Remarks.
Alexander	yellowish white	a little soft, juicy	pleasant	Oct.-Dec	5	10	10	9	Coming more into favor every year as one of our best selling fall apples.
Astrachan, Red	white	crisp, moderately juicy.	spicy, acid	Aug.-Sept	8	8	7	1	Not desirable to grow here.
Baxter or La Rue	white	firm	slightlyacid	Oct.-Feb	4	9	8	8	Subject to fungus; that is the chief fault.
Ben Davis	white	firm	poor	Oct.-June	2	4	8	9	Its chief point of value is its long keeping quality.
Colvert	greenish white	firm	brisk, sub-acid	Oct.-Jan	5	9	9	8	
Duchess	white	firm, juicy	pleasant acid when ripe	Aug.-Sept.	6	10	10	8	
Fameuse	very white, sometimes streaked with red	tender, juicy	pleasant, slight perfume	Oct.-Jan	10	8	9	8	Most susceptible to fungus of any.
Gideon	white	firm	pleasant	Oct.-Dec	8	9	10	8	A handsome, clean prolific apple.
Grimes Golden	yellow	compact, crisp, tender, juicy	rich, sprightly, sub-acid, aromatic	Oct.-March	9	4	6	7	Too tender for this section.
Haas	white, tinged with red	firm	poor	Oct.-Feb	4	7	7	8	Quality against it.
Hurlbut	white	crisp, tender, juicy	pleasant, mild, sub-acid	Oct.-March	8	8	8	8	A fairly good apple.
King of Tompkins	yellowish	juicy, tender	agreeable, rich, vinous, aromatic	Oct.-March	9	9	10	10	Does well here top-grafted on hardy stock.
Maiden's Blush	white	tender	sprightly, pleasant, sub-acid	Oct.-Dec or Jan	5	8	9	8	
Mann	yellowish	firm	pleasant when ripe, sub-acid	Jan.-April	8	9	9	10	About equal to R. I. Greening. A promising variety.
N. Spy	white	fine-grained, tender	slightly sub-acid, very finest	Oct.-May	10	10	10	10	The most popular winter variety here.
Pewaukee	white		sub-acid, pleasant when ripe	Oct.-March	6	8	9	9	Has the fault of dropping from tree.
R. I. Greening	yellow	fine-grained, tender, crisp, juicy	pleasant aroma, rich	Oct.-May	8	10	9	8	

APPLES.—DESCRIPTIVE LIST.—*Concluded.*

Variety.	Fruit.			Season. (Months of use as Dec.-March.)	Quality. Scale 1-10.		Value. Scale 1-10.		Remarks.
	Flesh.								
	Color.	Texture.	Flavor.		Dessert.	Cooking.	Home market.	Foreign market.	
Ribston Pippin	white	firm	one of the best, fine flavor	Oct.-Feb. here.	10	8	10	10	Does fairly well here.
St. Lawrence	white	crisp, juicy, t'nder	pleasant, rich	Oct.-Nov	10	9	9	5	Subject to fungus but a good market sort.
Talman Sweet	white	firm, fine-grained	sweet and rich	Oct.-March	6	5	2	5	Valuable as stock for top-grafting on.
Tetovsky	white	juicy, soft	pleasant, sub-acid	August	7	9	6	.....	
Twenty Oz.	whitish	coarse	sub-acid, poor	Oct.-Jan	4	7	8	9	On account of large size and attractive appearance it sells well.
Wealthy	white, stained with red.	fine-grained, tender, juicy.	pleasant, slightly acid, crisp	Sept.-Dec	8	8	9	8	Drops badly, must be picked before end of September.
Wagener	yellowish	tender, juicy, brisk.	excellent	Oct.-March	7	8	8	7	
Yellow Tr'sparent	white	firm	fair	August	6	8	6	.....	

REPORT OF SIMCOE EXPERIMENT STATION.—*Continued.*

RASPBERRIES AND BLACKBERRIES.—Descriptive List.

Size: S, Small; M, Medium; L, Large.
Form: R, Round; C, Conical; O, Ovate.
Flesh: F, Firm; S, Soft.
Season: E, Early; M, Medium; L, Late.
Color: D, Dark; R, Red; P, Purple; O, Orange; B, Bright.

Variety.	Plant.							Berry.						V'l'e scale 1-10.		Remarks.
	Habit of growth.	Freedom from disease 1-10.	Propagation by tips or suckers.	Foliage.	Vigor, scale 1-10.	Hardiness, scale 1-10.	Productiveness, scale 1-10	Size.	Form.	Color.	Flesh.	Flavor.	Season.	Dessert.	Market.	
Cuthbert	upright strong	10	suckers.	healthy.	9	7	10	L	R	R	F	good..	L	10	10	
Shaffer	spreading.	8	tips	healthy.	10	8	9	L	R	P	S	good..	L	8	6	Good for canning.
Golden Queen	upright...	10	suckers.	healthy.	9	8	8	M	R	O	F	best..	L	10	10	A white Cuthbert.
Gregg	spreading.	5	tips ...	medium	8	8	8	L	R	B	F	M ...	L	8	9	Subject to blight.
BLACKBERRIES.																
Snyder	upright, strong	10	suckers.	healthy.	10	10	10	M	C	B	F	M ...	M	7	9	The hardiest tried here.

STRAWBERRIES.—Descriptive List.

Fruit Stalk: Long or short; above foliage or concealed by it.
Size: S, Small; M, Medium; L, Large. Add average length and breadth in inches.
Form: B, Broad; C, Conical; D, Depressed; I, Irregular; L, Long; O, Ovate; R, Round.
Color: B, Bright; C, Crimson; D, Dark; L, Light; R, Red; S, Scarlet.
Flesh: F, Firm; S, Soft.
Season: E, Early; M, Medium; L, Late.

Variety.	Plant.					Berry.						V'l'e scale 1-10.		Remarks.
	Sex.	Foliage, healthy or liable to rust.	Fruit stalk.	Vigor, scale 1-10.	Productiveness, scale 1-10.	Size.	Form.	Color.	Flesh.	Flavor.	Season.	Dessert.	Market.	
Wilson	S	liable to rust..	M	9	10	M	C	R	F	good .	M	8	10	The most reliable market variety among the older varieties.
Crescent	P	healthy.	L	10	10	L	I	S	M	acid..	E	7	9	
Sharpless	S	healthy.	S	10	5	L	I	R	S	one of best.	L	10	10	Not productive on light soil, suits best on clay loam.
Bubach, No. 5	P	healthy.	S	9	9	L	C	R	M	good..	M	10	10	
Jessie	S	healthy.	L	9	7	L	C	R	S	good..	M	10	8	Not a success here.
Williams	S	healthy.	S	10	9	L	I	R	F	good..	M	9	9	
Haverland	P	healthy.	L	10	9	L	C	B	S	fine ..	L	10	7	A fine dessert berry but too soft for shipping.
Triumphe de Gand.		healthy.	L	10	7	M	R	B	S	too acid.	M	8	6	Not worthy of propagation.

REPORT OF SIMCOE EXPERIMENT STATION.

GRAPES.—Descriptive List.

Species: E, Estivalis; R, Riparia; L, Labrusca; H, Hybrid; X, Cross.
Size: S, Small; M, Medium; L, Large.
Bloom: H, Heavy; L, Light.
Color: B, Black; P, Purple; R, Red; W, White; L, Light; D, Dark.
Form: L, Long; S, Short; Sh, Shouldered.
Compactness: C, Close; L, Loose; St, Straggling.
Shape of Berry: Ov, Oval; R, Round.

Variety.	Vine.						Bunch.		Berry.			
	Species.	Foliage.	Vigor. Scale 1-10	Hardiness. Scale 1-10	Productiveness. Scale 1-10	Freedom from Disease 1-10	Form.	Compactness.	Size.	Shape.	Skin. Color.	Skin. Thickness.
Brighton	....	healthy	8	9	8	9	Sh	C	M	R	R	....
Champion	....	healthy	8	9	9	9	S	C	M	R	B	M
Concord	L	healthy	10	10	10	10	Sh	C	M	R	B	M
Delaware	....	healthy	9	9	9	9	Sh	C	S	R	R	.....
Early Victor	....	healthy	8	10	9	9	Sh	C	S	R	B	M
Lindley	...	medium	8	9	8	8	S	L	M	R	R	.....
Moore's Early	L	healthy	9	9	6	9	S	L	M	R	B	M
Niagara	L	healthy	10	10	10	10	Sh	C	M	R	W	thick
Salem	....	healthy	9	9	8	8	S	L	M	R	R	.....
Worden	L	healthy	10	10	9	10	Sh	C	M	R	B	M

GRAPES.—*Concluded.*

Variety.	Berry.		Value. Scale 1-10.		Remarks.
	Flavor of flesh.	Season. (Months of use as Oct. Nov.)	Dessert.	Market.	
Brighton	very good	late	10	10	Rather late here.
Champion	acid	early Oct.	6	7	Poor quality.
Concord	sweet	late	9	10	The best all round sort but rather late for this section.
Delaware	good	early Oct.	10	10	A good variety for clay soil.
Early Victor	sweet	early	7	9	Does not ripen evenly.
Lindley	good	M	10	10	One of the best reds.
Moore's Early	sweet	early Sept.	9	9	A good grape but poor bearer.
Niagara	foxy	Oct. & Nov.	9	9	
Salem	good	M	9	9	
Worden	sweet	Oct. & Nov.	9	10	Resembles Concord but ripens earlier.

Notes on Varieties.

I received for planting of apples 85 varieties of Russians from the Experimental Farm at Ottawa. A list of the names of them I have already sent you, and I might here remark that any of these that might prove desirable and valuable for this section would require to have their names Americanized, so that ordinary mortals would be able to pronounce them. These trees were very small, most of them mere twigs, so that only part of them were planted in orchard row; the rest were planted in nursery row, and will

be planted out later on. All of these lived and grew well, though the summer was very dry. They seem to be (judging from appearance of foliage and wood) of a hardy type, very much of the Duchess type, and I have no doubt are well suited to the climate of this section. We will, therefore, I am confident, be able to get out of all these varieties a number exactly suited for this section of country. Besides these I received 36 apple trees from A. M. Smith, St. Catharines, three each of the following varieties: Yellow Transparent, Bell and Bocskeop, Winter St. Lawrence, Titovka, Sutton Beauty, Stark, Longfield, Wallbridge, Haas, McIntosh Red, Shiawasee Beauty and Princess Louise. These were planted in orchard row and all lived and grew fairly well. Besides the trees I received several packages of scions for grafting; those from Vermont, being delayed in transit, were useless on arrival. Some from Quebec did fairly well. These were: Scott's Winter, Winter St. Lawrence, Wolf River, North West Greening. A number of scions were sent me of varieties I had been growing for fifteen years or more, these, of course, I did not use.

I had a number of Russian trees from the Ottawa Farm already under test. One of these, two years planted, bore fruit this year. It was the Hare Pipka, a large apple of the Alexander type, of fairly good quality, but affected by fungus spot. In connection with the apple experiments, I would suggest that provision be made for carrying on spraying experiments at each station, as that is now a very important item of the fruit industry.

I received, also, 14 varieties of plums, Yellow Gage, Monarch, Grand Duke, Quackenboos, Stanton, Rochester German Prune, Hudson River Yellow Egg, Middleburg, Shippers' Pride, Arch Duke, Black Diamond, Duane's Purple, Prince of Wales. These all grew well and will be watched with interest. I received also a number of Russian cherries. Five varieties of these were from Ottawa, viz., Bessarabian, Griotte Du Norde, Brussels Braun, Orel 24, Lutovka. They are of a dwarf habit of growth and appear very thrifty, and will bear young, so that we will soon be able to report on the quality of the fruit. Twelve cherry trees received from A. M. Smith all grew and throve well. In small fruits, I received six varieties of gooseberries, viz., Downing, Smith's Improved, Industry, Red Jacket, Pearl, Houghton. With the exception of Red Jacket, these all did well. In currants, I received seven varieties: Lee's Prolific, Black Naples, Saunders, Champion, Versailles, Cherry, Fay, all of which are doing well. Of raspberries, I received eight varieties: Marlboro, Kansas, Cromwell, Golden Queen, Turner, Older, Lovett and Palmer; of these two varieties, viz., Kansas and Cromwell, the rest are doing well. Of blackberries, four varieties: Kittatinny, Minnewaska, Agawam, Gainor. I hope some of these will prove hardy enough for this section. The Snyder does exceedingly well here and is perfectly hardy, but I would like to have one of better quality and larger. The Kittatinny has been tried here and found too tender, but I will try what winter protection will do for it. I also received 13 varieties of grapes: Green Mountain, Moore's Diamond, Jessica, Ives, Aminia, Amber Queen, Janesville, Missouri Riesling, Marmion, Cottage, Eaton, Moyer, Moore's Early. All these grew, but some of them are wrongly named. Some of them bore a bunch of fruit, and I found a black grape growing on a vine labelled a white variety. It is very important in this work that great care should be taken to have everything properly labelled and true to name. The growing of grapes for profit here is out of the question, as they can be produced with more certainty and much cheaper in southern Ontario, and the best we can do in this line is to recommend a few of the earlier ripening varieties of good quality for home use, or, in other words, for the amateur.

In strawberries, I received 40 varieties. The season was late and the weather dry at the time these were sent, so that they did not have a fair chance; yet they did remarkably well, only two varieties having entirely failed. The soil here (a warm loam) is well adapted to the growing of strawberries, and I expect to make some interesting and valuable experiments in this line in the future. I cannot, however, submit anything that would be of any value this year owing to the facts already mentioned, but hope next year to make the strawberry report both interesting and valuable to all those who take an interest in the growth of this very interesting and valuable fruit.

WENTWORTH STATION. RECORD OF EXPERIMENTS, 1894.

GRAPES.

Variety.	Origin.	When planted.	Soil.	Cultivation.	Fertilizers used.	Winter protection.	Weather favorable or unfavorable.
Agawam	Rogers' Hybrid	1887	clay	Plowed from 2 to 3 times, and cultivated every week or ten days until the first week of August.	none	No winter protection. Not laid down.	favorable.
Brighton (*a*)	Con. x Diana Ham	1882	"		"		"
Champion	Near Rochester, N.Y	1882	"		stable manure		"
Concord	E. W. Bull, Concord, Mass.	1874	"		"		"
Catawba (*b*)	N. Carolina, 76 years ago	1883	"		none		"
*Delaware (*c*)	Unknown, found in N.J	1874	"		stable manure		too dry.
Lindley	Rogers' Hybrid	1887	"		"		favorable.
*Massasoit	"	1883	blk. loam		none		"
Moore's Early	Con.—Seed by J. B. Moore.	1887	clay		ashes & n'ht.soil		too dry.
*Moyer	Chas. Reid's Seedling	1886	"		"		"
Niagara	Concord x Cassady	1882	"		none		favorable.
Worden	Concord Seedling	1884	"		stable manure		too dry.
*Wilder	Rogers' Hybrid	1884	"		"		favorable.

GRAPES.—*Continued.*

Variety.	Date of maturity.	Date of gathering. (Berries, first and last.)	Yield.	Grade.			Average price.†
				Class 1.	Class 2.	Class 3.	
			lb.				cts.
Agawam	Oct. 12	Oct. 22	17½	17		½	3
Brighton (*a*)	Sept. 10	Sept. 10	8	8			3½
Champion	Aug. 24	Aug. 24 to 31	16	16			2¾
Concord	Sept. 18	Sept. 26	19	18	1		2
Catawba (*b*)	Oct. 20	Oct. 25	16¾	16		¾	5
*Delaware (*c*)	Sept. 7	Sept. 7 to 10	7½	7	½		4
Lindley	" 12	" 12 to 15	17	15	2		3½
*Massasoit	Aug. 31	Aug. 31	13	13			5
Moore's Early	" 28	" 28 to 31	6	6			4
*Moyer	" 28	" 28 to 31	5	5			5½
Niagara	Sept. 8	Sept. 8 to 29	17¾	16	1¾		2
Worden	Aug. 31	Aug. 31 to Sept. 12.	16	14½	1½		3
*Wilder	Sept. 24	Sept. 94 to Oct. 29.	15	15			2½

* Affected with thrip. (*a*) About half a crop. (*b*) Very fine quality. (*c*) A very light crop.

† The above prices were obtained from retail dealers on orders given by them.

REPORT OF WENTWORTH EXPERIMENT STATION.—M. Pettit, Experimenter, Winona.

GRAPES. Descriptive List.

Species: E, Æstivalis; R, Riparia; L, Labrusca; H, Hybrid; X, Cross;
Size: S, Small; M, Medium; L, Large.
Form: L, Long; S, Short; Sh, Shouldered.

Compactness: C, Close; L, Loose; S, Straggling.
Shape of Berry: O, Oval; R, Round.
Color: B, Black; P, Purple; R, Red; W, White; L, Light; D, Dark.

No.	Variety.	Vine. Origin.	Species.	Foliage.	Vigor. Scale 1-10.	Hardiness. Scale 1-10.	Productiveness. Scale 1-10.	Freedom from disease, 1-10.	Bunch. Form.	Bunch. Compactness.
1	Alvey (Hagar)	E X Vinifera, Maryland	EH	healthy	7	8	6	8	L Sh	L
2	Agawam (Rogers 15)	BlackHamburg X Native Wild Mammoth. E.S Rogers, Salem, Mass	LH	thick	9	9	8	4	L	L
3	Amber Queen	Massachusetts	LH	thick	7	6	5	6	Sh	C
4	August Giant	Hamburg X Marion, Massachusetts	RH	very strong	8	8	7	8	Sh	C
5	Barry (Rogers 43)		LH	healthy	9	9	8	7	S	C
6	Brighton	Concord X Diana-Hamburg. Raised by Jacob Moore, Brighton, N.Y.	LV	thick	8	10	7	6	L Sh	L
7	Catawba	A native of North Carolina. Name from Catawba river	L	medium	8	10	8	5	L	C
8	Creveling	Columbia county, Pa	LH	healthy	10	10	6	6	L	S
9	Dracut Amber	J. W. Manning, Dracut, Mass	L	thick	6	9	7	6	S	C
10	Duchess	White Con. X Del. or Walter. A. J. Caywood, Newburgh, N.Y.	LH	medium	6	5	6	8	L	C
11	Eumelan	Chance Seedling	E	medium	6	7	6	7	M	C
12	Jefferson	Concord X Iona	L	thick	4	5	5	7	L Sh	C
13	Lady	Concord Seedling	L	healthy	2	10	2	6	S	C
14	Lindley (Rogers 9)	Golden Chasselas X Wild Mammoth	LH	strong	9	10	8	8	L	L
15	Marion	Pennsylvania	R	thin	9	9	7	7	S	L
16	Massasoit (Rogers 3)		LH	healthy	9	9	5	6	Sh	S
17	Martha	Concord Seedling	L	light	4	6	4	6	Sh	L
18	Moore's Early	John B. Moore, Concord, Mass. Concord Seedling	L	thick	5	9	4	9	S	C
19	Noah	Seedling of Taylor, Illinois	R	strong	9	9	10	5	L	C
20	Perkins	Massachusetts	L	thick	8	8	7	7	S	C
21	Prentiss	J. W. Prentiss, Pultney, N. Y. Seedling of Isabella	L		6	7	6	6	S	C
22	Rebecca	Accidental Seedling. New York State	L	weak	3	4	3	3	S	L
23	Requa (Rogers 28)		LH	strong	10	8	8	7	S	C
24	Salem	Hamburg X Wild Mammoth	LH	strong	10	8	8	6	Sh	C
25	Taylor	Riparia X Labrusca	RL	strong	9	9	8	7	S	C
26	Vergennes	Chance Seedling	L	strong	7	7	6	7	L	C
27	Wilder		LH	strong	7	9	7	7	Sh	C
28	Worden	Seedling of Concord	L	strong	7	10	7	8	Sh	C
29	Wyoming Red		L	strong	8	8	7	8	S	C

GRAPES.—DESCRIPTIVE LIST.

No.	Berry.							Season. (Months of use as Oct., Nov.)	Value. Scale 1-10.		Remarks.
	Size.	Shape.	Skin.		Flesh.		Seeds—number and size.		Dessert.	Market.	
			Color.	Thickness.	Pulp.	Flavor.					
1	S	O	B	thin	none	sweet, vinous	2, small	October	2	2	Of little value.
2	L	R	D R	thick	soft	sweet, sprightly, aromatic	3 to 4 large	Oct. & Nov	9	9	Most productive on clay loam with hard
3	M	O	P	thin				Oct. & Nov	6	5	A long keeper. [subsoil. Needs long pruning.
4	L	O	B	thin	tender			September	5	5	Too tender to ship.
5	L	R	B	thick	tender	sweet, pleasant		October	7	7	One of the best Black Rogers.
6	L	R	R	thin	very little	sweet, aromatic & vinous.		September	8	7	
7	L	R	R	medium	slight	rich, vinous, musky	3, medium	Oct. & Nov	10	10	Will ripen in favorable localities.
8	L	O	B	thin				September	6	4	
9	S	R	R	thick	hard			September	2	4	
10	S	R	W	thin	none		1 to 2 small	October	5	6	A choice winter grape.
11	M	R	B					September	7	5	
12	M	R	R	thin				Oct. & Nov	6	6	Ripens too late.
13	S	R	W		tender			September	8	8	Not productive.
14	M	R	R	thick				September	9	9	
15	S	R	B	thin				October	2	2	
16	L	R	R	thick				September	6	8	Should be grown with other varieties to
17	S	R	W	thin	pulpy		1 to 2, small	September	7	4	An amateur grape. [fertilize it.
18	L	R	B	medium	hard			September	7	8	Not productive enough.
19	M	R	W	thin	hard			October	2	3	Too poor in quality.
20	M	O	P	thick	pulpy		few & small	September	3	5	
21	M	O	W	medium				October	5	5	Overloads and does not ripen its wood.
22	S	O	W	thin	none		small	September	8	5	An amateur grape.
23	L	R	R	thin				September	8	8	One of the best Rogers.
24	L	R	R	thick			large	September	8	9	
25	S	R	W	thin	none			October	2	2	Of no value.
26	L	R	R	thick				Oct. & Nov	6	8	
27	L	R	B	thick	slight			September	7	8	
28	L	R	B	thin				September	9	8	
29	S	R	R	thin	hard			September	4	6	Very handsome but too poor in quality.

Notes on Varieties.

At the Wentworth Experiment Station, at Winona, I have planted, this spring, for testing, 48 varieties of grapes, 28 of peaches, 18 of cherries, 22 of plums, 23 of strawberries, 9 of currants, and a few gooseberries, raspberries and blackberries. Of grapes that I have previously tested I will now refer to a few that have some good qualities to commend them.

August Giant. A very large black grape of fine appearance and good quality. It ripens with the Concord; is too tender to ship well.

Amber Queen. A handsome red grape, good shaped bunch; quality good; fairly productive.

Adirondac. A fine amateur grape of the highest quality; vine requires winter protection.

Agawam. One of the best.

Brighton is a cross between Concord and Diana Hamburg, and shows the Hamburg in both form of bunch and flavor. It is a valuable early market grape.

Catawba has been profitable with me. It always sells higher than any grape in the market: it requires close pruning to prevent overloading.

Champion has been, and is still, a very profitable grape; its extreme earliness and productiveness are its only good qualities.

Creveling is valuable for home use; it is early, good quality, and will hang on the vines and improve in flavor until frost.

Diana is a good grape for winter use, and makes a very choice wine.

Duchess. A good flavored white grape, flesh tender, free from pulp, sweet, spicy and rich; would be valuable if we had no Niagara.

Delaware always commands the highest price if properly grown; it requires close pruning, rich soil and good cultivation.

El Dorado is one of the finest flavored grapes in existence; good for amateur; not productive enough as a market grape.

Eumelan. Early, good flavor, and productive.

Goethe (Rogers' No. 1). Large, fine flavor, pink or red when fully ripe; hardy and very productive.

Herbert (Rog. No. 44) is one of the best black Rogers in appearance, flavor and productiveness.

Iona and *Jefferson* are both handsome red grapes, of good quality, but ripen late; suitable only for favorable localities.

Lady is a fine early white grape, of good quality; vine rather slow grower, but very hardy; it should be suitable for the north.

Lindley (Rog. No. 9), is one of the most profitable of all grapes that I have grown and one of the finest in appearance and flavor.

Massassoit (Rog. No. 3), the earliest of Rogers' grapes, good quality; does not fertillze well, is improved by planting alternately in the row with a good blooming variety.

Moore's Early. A good early grape, but not quite productive enough.

Niagara is far the most profitable white grape.

Moore's Diamond is a promising grape, good quality, fine appearance, and early.

Moyer is profitable, principally on account of its extreme earliness.

Regua (Rog. No. 28). A large compact bunch, good flavor; productive; resembles the Salem in appearance.

Wilder (Rog. No. 4) is one of the best black grapes for market, and holds its flavor with long keeping better than any other grape.

Worden. Very much like the Concord, of which it is a seedling, but sweeter and better in flavor, and a few days earlier, which makes it one of the most profitable.

Experimental Spraying.

The following experiments in spraying were conducted at the Wentworth Fruit Experiment Station, under the direction of Mr. John Craig, Horticulturist, Central Experimental Farm, Ottawa. The Bordeaux mixture was used, with Paris green added (four ounces to forty gallons):

Apple trees. Sprayed April 16th, May 4th, May 15th, May 29th, June 9th, June 29th. On two Fameuse trees sprayed thoroughly on the above dates there was scarcely a perfect specimen, but less scab than the previous year. Two Spy trees treated on the above dates were very much better than those unsprayed. Two Baldwins showed a very marked difference, one tree produced 286 No. 1 and 90 No. 2, the other 298 No. 1 and 164 No. 2, while the balance of the orchard under the same conditions, except spraying, had comparatively nothing on. Two good average trees were selected, one had 14 No. 1 and 31 No. 2, the other 11 No. 1 and 36 No. 2.

Pear trees. Sprayed on April 16th, May 4th, May 15th, May 29th, June 13th, June 29th. Flemish Beauty sprayed on the above dates produced 75 per cent. more fruit and of much better quality than unsprayed trees of the same age, cultivation and other conditions. Beurre Gifford trees sprayed on the above dates were loaded with perfectly clean fruit, while those not sprayed until the fungus appeared, which was very soon after the pears had formed, and then thoroughly sprayed on May 29th and June 9th, were almost an entire failure, scarcely any fruit and of poor quality. Bartletts showed but little difference between sprayed and unsprayed, which is accounted for as Bartletts were all comparatively free from fungus this season.

About fifty varieties of grapes were sprayed on April 16th, May 4th, May 29th, June 9th and June 29th, which gave no results, as we had no mildew or rot this season. Some leaf blight appeared on Delaware and Moyer that had been sprayed. Altogether I am highly pleased with the results. Like many other fruit growers in this section, I have sprayed for several years, but not thoroughly, and was not certain of any good results, which I think are just in comparison to the thoroughness of the work done. I also think from this season's experiments that two sprayings before the trees bloom, which is more easily done, is of more value than four times after. We hope next season to experiment more fully in spraying, also to test the value of early and late spraying.

REPORT OF SOUTHWESTERN FRUIT EXPERIMENT STATION.

W. W. Hillborn, Experimenter, Leamington. Ont.

STRAWBERRIES.—Descriptive List.

Fruit Stalk: Long or short; above foliage or concealed by it.
Size: S, small; M, medium; L, large.
Form: B, broad; C, conical; D, depressed; I, irregular; L, long; O, ovate; R, round.
Color. B, bright; C, crimson; D, dark; L, light; R, red; S, scarlet.
Flesh: F, firm; S, soft; M, medium.
Season: E, early; M, medium; L, late.

Variety.	Plant.					Berry.						Value Scale 1-10	
	Sex.	Foliage. Healthy or liable to rust.	Fruit stalk.	Vigor Scale 1-10.	Productiveness. Scale 1-10.	Size.	Form.	Color.	Flesh.	Flavor.	Season.	Dessert.	Market.
Bubach	P	Healthy	Med	8	10	L	B	L R	M	Med.	M to L	8	*10
Beder Wood	B	Some rust	Long	6	8	M	R	L R	M	Med.	E	8	†8
Crescent	P	Nearly healthy.	Med	10	10	M	C	S	M	Med.	E	8	9
Captain Jack	B	Some rust, mostly healthy	Long	7	6-9	M	R	S	M	Good.	L	8	8
Gov. Hoard	B	Little rust	Med	6	7	M	C D	D R	F	Good.	E	9	8
Lovett	B	Nearly healthy.	Med	7	8	M	C	C	F	Med.	M	7	8
Middlefield	P	Healthy	Med	8	6-8	M to L	C B	B R	M	Good.	M	10	7
Parker Earle	B	Nearly healthy.	Tall	8	7-9	M	C	B R	F	Med.	L	7	
Saunders	B	Quite healthy.	Med	8	8	L	C D	D R	M to F	M to G	M to L	8	8
Wilson	B	Sometimes rusts badly	Med	6	4-8	M	C	D R	F	M to G	M	8	10
Williams	B	Some rust	Short	9-10	8-10	L	B D C	D R	M	Med.	M to L	6	8-10
Woolverton	B	Not much rust.	Med	7	8	L	B C	B R	M to F	Good.	M to L	8	8

* 4 for distant market. † 3 for distant market.

Notes on Varieties.

The season of 1894 has not been favorable for the strawberry in this locality. The early part of the season was favorable to their growth. Just as the fruit began to ripen dry weather set in, and continued until the whole crop was gathered. The continued heat and drouth shortened up the crop fully one-half. Our first ripe berries were *Michell's Early*, and were gathered May 31st. This variety does not produce enough fruit to make it a profitable sort. Following soon was *Beder Wood*; this is productive, fruit about medium size, and taking all in all, it is perhaps the best first early berry. There is no first early kind that I have seen that quite fills the bill. *Crescent* is not quite so early as the above, but still continues to be the most profitable early sort, especially on strong soil. On a light, sandy soil it is not always satisfactory. For a market not too distant, *Bubach* has succeeded best with me. The fruit is very large, and such a bright red that it will bring a good price in any market. In a wet season it is not firm enough to ship to a distant market. This season it was shipped 200 miles and brought 13c. wholesale for the first picking. It ripens mid-season.

Gov. Hoard is about the earliest large berry, of good quality, and well worthy of very general trial. The plant is quite a strong grower, the fruit is large, dark bright red, quite firm, and better in quality than most varieties. *Saunders*, *Woolverton* and *Lovett* are all promising for market and home use, and should be more generally tested throughout the country. *Williams* is a new Canadian berry that yields a large crop of large fruit; it, however, has a green tip which is somewhat against it, although the fruit being large and of a bright dark red color, and produced in abundance, will make it a profitable late market variety. *Wilson* is still grown more largely than any other sort in this locality for market, and will, no doubt, continue to be for some time to come on account of its good shipping qualities. *Parker Earle* is one of the best late sorts for market or the amateur. It forms very large plants and but few runners; it is, therefore, well adapted to garden culture. It requires a moist soil, as it sets such a large quantity of fruit that it cannot bring it to maturity without plenty of moisture. *Middlefield* is a fine large berry of very fine quality, of attractive light red color; plant very healthy and free from rust and quite productive; better for the amateur than for market. *Warfield* is a failure here, although it succeeds in many localities. The above table shows a description of twelve varieties of strawberries grown at this Station.

PEACHES.

The peach crop in this locality was a large one this season. A large percentage of the early fruit was a little under size, owing to the unusually dry weather. About the middle of September rain came and helped later kinds very much.

I have 71 varieties planted, in all about 10,000 trees.

Descriptive List of Varieties Well Tested Here.

(Described in order of ripening.)

Alexander. Tree moderately strong, grows hardy and productive; fruit medium to large, nearly round; skin greenish-white, nearly covered with deep, rich red, purplish in the sun; flesh whitish, with a tinge of green, half-melting, juicy, sweet, partial cling.

Early Rivers. Tree a good grower and quite productive; fruit round, medium to large, straw color with a delicate pink cheek; flesh melting and of very fine quality. Will not stand shipping to a distant market.

Mountain Rose. Tree vigorous and healthy; fruit medium to large; skin greenish-white, streaked and suffused with red in the sun; flesh white, juicy and good. Not up to its usual standard this season.

Early Barnard. Tree a moderately strong grower, very hardy and productive. Fruit round, medium to large ; skin yellow, reddish purple in the sun ; flesh very rich and sweet, of the best quality, dark yellow, red at the stone. One of the most reliable sorts grown.

Early Crawford. Tree a free grower and productive in favorable seasons. The fruit buds are tender and are often killed when most other sorts escape. Fruit very large, oblong ; skin yellow, with a fine red cheek ; flesh yellow, rich and of fine quality.

Oldmixon. Tree a vigorous grower, not hardy in fruit buds, it therefore yields well only in favorable seasons. Fruit large, roundish ; skin pale yellowish white, marbled with red, cheek a deep red ; flesh white, red at the stone and of excellent quality.

Tyhurst Seedling. Tree of small willowy growth, very hardy in wood and fruit bud, a very productive annual bearer. Fruit medium, round ; skin, light yellow, sometimes carmine in the sun ; flesh yellow, sweet and of the best quality.

Late Crawford. Tree vigorous and healthy, productive and somewhat hardier in fruit bud than Early Crawford. Fruit very large, roundish ; skin yellow, with a fine dark red cheek ; flesh yellow, red at the stone, of fine quality.

Hill's Chili. Tree of small willowy growth, very hardy in wood and fruit buds. A regular annual bearer, very productive. Fruit large, dull yellow, shaded with dull red, very downy ; flesh yellow and of fair quality. Good for canning.

Golden Drop. Tree a moderately vigorous grower, hardy in wood and fruit buds, very productive ; fruit medium to large, round ; skin yellow, sometimes shaded with carmine in the sun ; flesh yellow, sometimes a little dry, but of quite good quality. One of the best of its season which is just after Late Crawford.

Smock Free : Tree vigorous and productive ; fruit large, oblong ; skin light orange yellow mottled with red ; flesh bright yellow, red at the stone. A splendid variety for shipping a long distance.

Lemon Free : Tree very vigorous, hardy and productive ; fruit very large, oval, pale lemon yellow, of excellent quality, sweet and rich, ripens just after Smock.

Salway : Tree vigorous and productive ; fruit large, greenish yellow slightly suffused with red ; flesh greenish yellow, medium quality ; ripens in October. Valuable where it can be grown on account of its late ripening. This season we gathered and used the last of them October 21st.

Notes on Varieties.

Alexander, Amsden's June and Early Canada are all practically identical. The four most profitable varieties grown in this locality (of the older sort) have been Alexander, Barnard's Early, Tyhurst Seedling and Hill's Chili. The two latter are perhaps the most hardy in fruit buds, and give a good crop nearly every season. They are probably the most profitable sorts to plant in sections not well adapted to peach culture.

Among new varieties *Fitzgerald* is perhaps the most promising. It is of the Early Crawford type, and apparently an improvement on that old favorite. The fruit buds are more hardy and the young trees will begin to bear the second year from planting. The fruit is large ; skin bright yellow suffused with red ; flesh, deep yellow and of the best quality ; stone not as large as in Crawford. It is yet too early in its history to speak definitely as to its many good qualities. It, however, shows indications of being the most valuable new peach I have seen. Its season of ripening is with or just after Early Crawford.

Boyle's Yellow is another quite new sort in this locality that is very promising. It is the first yellow fleshed peach to ripen with me. Fruit large, round ; skin bright yellow suffused with carmine ; flesh yellow, very rich and melting, of the best quality. Its fine quality, bright color and earliness, together with its productiveness, will, I think, make it quite popular when better known. *Lemon Free* is one of the most hardy and

productive varieties grown and of very fine quality. Fruit very large. I picked this season thirty specimens that filled an eight-quart basket. I fear, however, it may be a little too late in ripening for many portions of Ontario.

APRICOTS.

In the spring of 1890 I planted *J. L. Budd Alexis*, *Nicholas*, *Catherine*, *Alexander* and *Gibb* of the Russian varieties, and *Moorpark*, *Early Golden*, *Peach* and *Royal* of the European sorts. All have fruited this season except the two latter. The Russian varieties and Early Golden are all quite similar to each other in size and quality. All are too small in size to be of value here. There is a slight variation in time of ripening, quality and size, but not sufficient to make any of them worthy of special note. *Moorpark* is a splendid large variety, well worth planting in favorable localities. The fruit is large, about two inches in diameter each way. Skin orange in the shade, but deep orange or brownish red in the sun, marked with numerous dark specks and dots; flesh quite firm, bright orange, parting free from the stone, quite juicy with a rich and luscious flavor. The apricot blooms so early in the spring that it is liable to injury from late spring frosts to such an extent that it is doubtful if it will pay to plant it except where the frosts are kept in check by large bodies of water. The curculio is another serious drawback to the culture of the apricot. The little Turk appears to prefer it to any other fruit. The Moorpark, from some other cause, escaped very well this season with me while other sorts were badly injured.

JAPAN PLUMS.

I had in bearing this season the *Abundance*, *Ogon* and *Kelsey*.

Abundance is far the most valuable of the three. Tree a free, strong grower, quite hardy here and wonderfully productive, in fact, it is not surpassed in this respect by any other variety I have seen. Fruit nearly as large as Lombard, oblong; skin yellowish green ground, nearly covered with a bright purplish red, with heavy bloom; flesh orange yellow, not nearly as good in quality as Lombard; ripens early, can all be marketed before the European varieties are ripe. Its productiveness, earliness and beautiful appearance combined will make it a valuable market variety.

Ogon: Tree a moderate grower, quite productive; fruit large, nearly round; bright golden yellow; flesh firm, quite dry and of such poor quality that I do not consider it of any special value.

Kelsey: Tree not as hardy as the peach, hence of no value for Ontario. Fruit large, heart-shaped; skin yellow, nearly covered with red; flesh firm and of fair quality; stone small.

VOLUNTARY EXPERIMENTAL WORK.

The following reports on gooseberries and strawberries, by Mr. A. Morton, Brampton, Mr. Stanley Spillett, of Nantye, and Mr. A. Stevenson, Lowville, have been contributed in response to the personal solicitation of the Secretary and without remuneration. This work the Board gratefully acknowledges, and has pleasure in publishing the same for the public good.

VOLUNTEER REPORT BY A. MORTON, BRAMPTON, ONT.

GOOSEBERRIES.—Descriptive List.

Size: S, Small; M, Medium; L, Large.
Form: L, Long; S, Short; Sb, Shouldered.
Compactness: C, Close; L, Loose; St, Straggling.

Form of Berry: R, Round; Ov, Oval; Ob, Oblong.
Color: R, Red; B, Black; W, White; G, Green; Y, Yellow.
Season: E, Early; M, Medium; L, Late.

Variety.	Plant.			Berry.						Value. Scale 1-10.		Remarks.
	Vigor scale 1-10.	Productiveness scale 1-10.	Freedom from mildew 1-10.	Size.	Form.	Skin.	Color.	Flavor (See Thomas.)	Season.	Dessert.	Market.	
Crown Bob	8	9	free	L	R	few pr.	R	good	M	9	10	
Ocean Wave	8	9	free	L	L	sm	G	v. good	M	10	10	
Whitesmith	9	8	free	L	R	sm	W	good	M	10	10	
Wonderful	10	10	free	L	R	sm	R	v. good	M	10	10	
Bloodhound	9	9	free	L	R	sm	R	good	M	9	9	
Princess Royal	8	8	free	L	R	prickles	G Y	good	M	10	10	
Scotch Jam (rough)	10	10	free	M	R	prickles	R	fair	M	4	10	Unequalled for preserving.
Large Scotch Red	10	8	free	L	R	sm	R	good	L	9	9	
One-of-them	10	9	free	very L	R	prickles	R	good	M	10	10	
Two-to-one	10	9	free	very L	R	sm	Y G	good	M	10	10	
Industry	10	10	free	L	R L	sm	R	fair	M	7	7	The most inferior of all English ones I have.
Shakespeare	7	6	free	L	R	sm	R	good	M	9	9	
Lancashire Lad	9	9	free	L	R	sm	R	good	M	10	10	
Yorkshire Lad	9	9	free	L	L R	prickles	R	good	M	10	10	
Mordon's Golden Drop	9	10	free	M	R	sm	Y	good	M	10	10	
(The above varieties are all of English origin.)												
Champagne	9	9	free	L	L	sm	Y	good	E	10	10	
Ringer	8	8	free	V L	R	sm	Y	good	M	9	9	
Smolenski	8	7	free	L	L	sm	R	good	M	9	9	
Keepsake	9	10	free	L	L	sm	Y	good	M	9	9	
Duke of Sutherland	10	10	free	L	L	sm	G	good	M	10	10	
Coiner	9	9	free	L	R	prickles	Y	good	M	10	8	Color not taking.
Thumper	10	9	free	L	R	sm	G	good	M	9	9	
Gipsy Queen	10	8	free	L	R	sm	G	good	M	9	9	
Pindston Green Gage	10	9	free	S	R	sm	G	v. good	M	10	8	The sweetest and best flavored of all.
Red Warrington	9	9	free	M	R	sm	R	v. good	M	10	10	Excellent dessert berry.
Companion	9	9	free	L	L	sm	G W	good	M	10	9	

VOLUNTEER REPORT ON STRAWBERRIES

Fruit Stalk: Long or Short; above foliage or concealed by it.
Size: S, Small; M, Medium; L, Large. Add average length and breadth in inches.
Form: B, Broad; C, Conical; D, Depressed; I, Irregular; L, Long; O, Ovate; R, Round.

Number.	Variety.	Plant. Sex.	Origin.	Foliage. Healthy or liable to rust.	Fruit stalk.
	List No. 1.				
1	Beder Wood	S	Seedling by Mr. Beder Wood, of Illinois	some rust	L
2	Cyclone	S	Seedling of Crescent and Cumberland by E. Cruse, of Kansas.	very healthy, no rust.	M to L
3	Enhance	S	Seedling of Sharpless and Windsor C by H. Young, of Ohio.	healthy	M
4	Greenville	P	Chance seedling by E. W. Buechly, of Ohio	very healthy	M
5	Lovett	S	Cross of Wilson and Crescent in 1885 from Kentucky.	healthy	M to S
6	Michel's Early	S	Chance seedling, thought Crescent, by J. G. Michel, of Arkansas.	healthy	M
7	Muskingum	S	Seedling by G. Kearns, of Ohio	very healthy	M
8	Marshall	S	Chance seedling found by Mr. Ewell, of Mass.	some rust, but healthy	M
9	Parker Earle	S	Cross of Crescent and T. V. Munson's No. 8 by J. Nimon, of Texas.	some rust	M to S
10	Princeton Chief	P	Thought a cross of Crescent and Kentucky by T. W. Poscharsky, of Illinois.	healthy	L
11	Swindle	P	Seedling of Jersey Queen and Glendale by Mr. Smalley.	some rust	M
12	Timbrell	P	Seedling by H. S. Turnbull, of Orange Co., N. J.	healthy	M
13	Haverland	P	Seedling from Ohio	very healthy	L
14	Saunders	S	Seedling by John Little, of Ontario	healthy	M
15	Bubach	P	Seedling by Mr. Bubach, of Illinois	very healthy	M
16	Williams	S	Thought a seedling of Wilson from Ontario	some rust, but healthy	M to S
	List No. 2.				
1	Beverley	S	Seedling of Miner's Prolific	healthy	M
2	Clyde (not yet introduced)	S	Seedling of Cyclone by Dr. Stayman, Kansas	very healthy	L
3	Edgar Queen	P	From Edgar Co., Ill., by C. O. Curtis	some rust, but healthy	M
4	Gaudy	S	Seedling, Jersey Queen x Glendale	healthy	M
5	Leader	S	Seedling by J. C. Campbell, Mass.	healthy	M
6	Maple Bank	P	Seedling of Crescent x Wilson	healthy	M
7	Phillip's Seedling	S	Seedling of Crescent x Sharpless	some rust, but healthy	M
8	Tennessee Prolific	S	Seedling of Crescent x Sharpless	very healthy	M to L
9	Van Deman	S	Seedling of Crescent x Capt. Jack, by J. P. Baner.	healthy	M
10	Woolverton	S	Seedling by John Little, Ont	very healthy	M to L
	List No. 3.				
1	Aroma	S	Seedling of Cumberland, 1889, by E. W. Cruse, of Kan.	very healthy	M
2	Auburn	P	Seedling of Haverland, Butler Co., Ohio	very healthy	S to M
3	Barton's Eclipse	P	Seedling of Longfellow, Mr. Barton, Ky	some rust, but healthy	M
4	Boynton	P	Thought Crescent x Sharpless, Albany, N. Y.	healthy	M to L

*Irregular.

—By E. B. Stevenson, Lowville, Halton Co., Ont.

Color: B, Bright; C, Crimson; D, Dark; L, Light; R, Red; S, Scarlet.
Flesh: F, Firm; S, Soft.
Season: E, Early; M, Medium; L, Late.

Number.	Plant.		Berry.							Value. Scale 1-10.		Remarks.
	Vigor. Scale 1-10.	Productiveness. Scale 1-10.	Size.	Form.	Color.	Date of first bloom.	Flesh.	Flavor (see Thomas).	Season.	Dessert.	Market.	
1	6	8	M	R	L	May 15	M	medium .	E	6	8 Near. 4 Distant.	
2	9	9	M to L	RC	BR	" 13	F	good	E	8	8	
3	9	8	L	R	DR	" 18	F	medium ..	M	6	10	
4	8	10	L	RC	BR	" 18	M	good	M	8	10 Near. 6 Distant.	
5	9	7	M to L	RC	D	" 19	F	medium .	M	6	8	
6	10	5	S	R	L	" 13	M	medium ..	E	6	8	
7	8	7	L	R	D	" 19	F	good	M	8	6	
8	8	6	L	R	D	" 18	F	good	M	8	7	
9	6	9	S	C	R	" 24	F	medium ..	M to L	8	8	
10	8	5	M	R	D	" 20	M	medium ..	L	8	8	
11	5	5	M	R	D	" 16	F	medium .	M	6	7	
12	7	8	L	RC	D	" 18	F	good	L	9	6	
13	9	10	L	L	BS	" 15	M	good	E	8	10 Near. 6 Distant.	
14	9	9	L	RC	BR	" 28	F	very good.	M	9	9	
15	7	9	V L	BC	D	" 17	M	good	M	8	10 Near. 6 Distant.	
16	9	8	L	RC	DR	" 30	M	M to poor	M	5	8	
1	7	8	L	R	D	" 16	VF	good	M to L	8	9	
2	9	9.5	L	RC	BR	" 14	F	good	E	9	9	
3	8	5	M	RC	R	" 24	M	medium ..	M to L	7	6	
4	8	6	L	RC	BR	" 16	M	good	L	8	6	
5	5	5	L	RC	D	" 14	F	very good.	E	10	6	
6	9	8	L	RC	DBR	" 28	F	good	M to L	9	8	
7	9	7	L	RC	DR	" 23	M	medium ..	M	7	6	
8	10	9	M to L	RC	BS	" 18	M	good	M	8	8	
9	10	8	L	C	DC	" 13	F	very good.	EE	9	9	
10	9	8	VL	BC	BR	" 19	M to F	good	L	3	8	
1	8	8	L	RC	R	" 24	F	good	L	8	9	Fine large, late, firm, worth trying.
2	9	7	M to L	RC	DR	" 30	F	very good.	M	10	7	Best quality, not productive enough.
3	8	7	L	R	R	" 24	F	medium ..	M	7	7	Further trial.
4	9	9	M	C	LR	" 15	M	medium ..	E to M	6	8	A good one, very like Crescent.

VOLUNTEER REPORT ON

Number.	Variety.	Plant. Sex	Origin.	Foliage. Healthy or liable to rust.	Fruit stalk.
	List No. 3.—Con.				
5	Chairs	P	Thought Bubach x Sharpless, Maryland	healthy	M
6	Dayton	S	Chance seedling by D. Feicht, of Dayton, Ohio.	healthy	M
7	Dew	S	Said to be Manchester x Sharpless, by Mr. Dew, of Mich.	very healthy	M to L
8	Eureka	P	1881, seedling by Geo. Townsend, of Gorden, Ohio.	healthy	M
9	E. P. Roe	S	1887, chance seedling by W. B. Brown, Newburg.	some rust, but healthy	M
10	Gov. Hoard	S	Seedling by F. W. Loudon, Janesville, Wis.	healthy	M
11	Gen. Putnam	P	Thought seedling of Crescent x Cumberland.	some rust, but healthy	M
12	Gillespie	S	Seedling of Haverland, by S. Gillespie, Ohio.	healthy	M to L
13	Iowa Beauty	S	Seedling by C. P. Walworth, of Iowa	healthy	M
14	Longfield	P	Seedling by Dr. Stayman, of Kan	very healthy	M to L
15	Mrs. Cleveland	P	1883, thought seedling of Cumberland, by Geo. Townsend, Ohio.	healthy	M
16	Warfield	P	Found growing wild by B. C. Warfield, of Ill., thought Crescent x with Wilson.	healthy	M to L

STRAWBERRIES.—*Continued.*

Number.	Plant.		Berry.							Value. Scale 1-10.		Remarks.
	Vigor. Scale 1-10.	Productiveness. Scale 1-10.	Size.	Form.	Color.	Date of first bloom.	Flesh.	Flavor (see Thomas).	Season.	Dessert.	Market.	
5	7	6	M	R	R	May 16	F	good	E to M	8	6	Hardly worth growing.
6	9	6	L	RC	S	" 22	M to S	medium ..	M	7	8	Further trial.
7	5	4	VL	CF	D	" 29	M	medium ..	L	7	4	Further trial.
8	8	5	L	RC	R	" 25	S	medium ..	L	6	5	Not worth much.
9	5	6	M	RC	L	" 26	S	medium ..	M to L	6	5	Worthless.
10	8	7	L	RC	R	" 16	F	good	M to L	9	7	Grand for first picking, soon over.
11	8	5	M	R	L	" 15	S	poor	E to M	5	4	Soft and poor, unworthy of trial.
12	8	7	L	L	S	" 15	VF	very good.	M	10	7	Best quality, not productive enough.
13	8	7	L	RC	D	" 24	F	very good.	M	10	7	Good for amateur.
14	9	9	M to L	C	D	" 24	F	medium ..	M to L	8	9	A good one.
15	8	6	M	R	L	" 22	S	poor	M	5	5	Worthless.
16	10	9	M	C	D	" 15	F	good	E to M	8	9	Well worth trying.

Varieties I have that will fruit in 1895. P—Pistillate and S—Staminate kinds.

Variety.	Sex.	Variety.	Sex.	Variety.	Sex.
Aroma	S	Glenfield	S	Oberholtzer's No. 4	P
Anna Forrest	S	Gov. Hoard	S	Ona	P
Arrow	S	Gandy	S	Parker Earle	S
Auburn	P	Gen. Putnam	P	Pawnee	S
Alabama	S	Gillespie	S	Phillips	S
Accomack	S	Gertrude	S	Princess	P
Afton	P	Gandy Belle	S	Primate	S
Alpine	S	Haverland	P	Prize	P
America	S	Howard's No. 25	S	Price	S
Annie Laurie	S	Howard's No. 41	P	Prince of Berries	P
Barton's Eclipse	P	Hatch Experi. Stn. No. 24	S	Princeton Chief	P
Beverly	S	Hunt's No. 3	S	Plow City	S
Bubach	P	Hanson	S	Robinson	S
Beder Wood	S	Hull's No. 6	..	Regina	P
Bessie	P	Hull's No. 8	..	Rio	S
Boynton	P	Hiawatha	..	Richmond	S
Beebe	S	Iowa Beauty	S	Standard	S
Belle of Lacrosse	P	Ivanhoe	S	Swinale	P
Briggs'	S	Jucunda Improved	S	Stayman's No. 1	P
Bisel	P	Jersey Queen	P	Southard	S
Brandywine	S	Jessie	S	Shuster's Gem	P
Belle or No. 51	S	Judsonia	S	Saunders	S
Beedes' No. 1	S	Jarabolo	S	Stevens	S
Beauty	S	Kossuth	S	Smith's Seedling	S
Clyde	S	Klickita	P	Sunny Side	P
Cyclone	S	Kansas Prolific	S	Snowball	S
Crusis No. 9	S	Lady Rusk	P	Scarlet Ball	..
Crawford's No. 51	S	Leader	S	Seedling A	P
Clark's E	S	Longfield	P	Splendid	S
Crimson Cluster	S	Lovett's	S	Stone's Early	P
Chairs	S	Leroy	P	" No. 15	..
Charlie	P	Magnate	P	" No. 16	..
Carrie	P	Maple Bank	P	" No. 7	..
Dayton	S	Middlefield	P	Stump	..
Dew	S	Mrs. Cleveland	P	Springdale	S
Dr. Arp	P	Martha	P	Seedling Superb	..
Della K	..	Michael's E.	S	Staples	..
Edward's Favorite	S	Meek's E.	S	Tennessee Prolific	S
Eureka	P	Muskingam	S	Timbrell	P
Enhance	S	Mary	P	Thompson's 104	..
Early Idaho	S	Marshall	S	Van Deman	S
Edgar Queen	P	Margaret	P	Warfield	P
E. P. Roe	S	Nehring's Gem	P	Williams	S
Epping	P	No Name	S	Woolverton	S
Effie May	S	Northern	S	Westbrook	P
Edith	P	Nectar	S	Watson	S
Equinox	S	Ohio Centennial	S P	Wicomico	P
Farnsworth	S	Oberholtzer's No. 1	S	Wentzell	..
Fremont	S	" No 2	P	Wm. Belt	S
Greenville	P	" No. 3	P		

I have in addition to these some 300 seedlings of choice crosses, some of which will fruit:

I have the following offered to me to test, to be sent in the spring: Holland; West Lawn; Pine Hill No. 40; Leviathan, Howard's No. 6 S.; Howard's 501; Howard's 23; Riehl's Nos. 5 and 6 and Nan.

Notes on Varieties of Strawberries for 1894.

This has been a fairly profitable year for strawberries, fair crops and good prices. Soil here, sandy loam, enriched with stable manure and well cultivated. Most of the kinds are grown in narrow matted rows, some few in hills. Of the ninety varieties that I fruited this year, the best are as follows:

Older Kinds. Bederwood, Bubach, Haverland, Jersey Queen, Saunders and Van Deman.

Newer Kinds. Barton's Eclipse, Greenville, Muskingum, Southard, Tennessee Prolific and Woolverton.

Newest Kinds. Aroma, Clyde, Cyclone, Longfield, Magnate, Maple Bark and Robinson.

A frost on evenings of May 13th took the first blooms off Cyclone, Beder Wood, Van Deman and Michel's Early, again, May 28th a sharp frost hurt most of the kinds very much. Some I think, one-half. Some did not recover, others seem to develop later buds and produced a fair crop of berries. Below is a list of valuable kinds and how they have done here this year.

Beder Wood. (P). A seedling grown by Mr. Beder Wood of Illinois, good grower and one of the earliest, medium size, good yielder, greatest fault does not ripen evenly, some rust, rich in pollen, rather soft.

Cyclone. (S). A seedling of Crescent and Cumberland, grown by E. W. Cruse of Kansas, a good healthy grower, early, medium in size, very productive, good quality, a very promising kind, well worth trying, firm berry.

Enhance. (S). A seedling of Windsor Chief and Sharpless grown by H. Young of Ohio, a vigorous grower, season medium, large size and productive, of medium quality, berries are somewhat irregular and sour, very firm, good shipper.

Greenville. (P). A chance seedling by E. M. Bueckly of Ohio, very much like Bubach in plant and growth, more vigorous though, season medium, large size, very productive, of fair quality and medium firmness, its productiveness and size make it a first-class berry for home or near market, a good one.

Lovett. (S). A seedling of Crescent and Wilson in 1885 from Kentucky—good grower, medium in season and size, fairly productive, poor quality, firm.

Michel's Early. (S). A chance seeding, thought to be from Crescent, by J. T. Michel of Ark., a rampant grower, season early, medium to small size, poor in productiveness, quality fair and medium firmness.

Muskingum. (S). A seedling by Grant Kearns of Muskingum, Co., Ohio, a strong, healthy grower. It is refreshing to find a new kind coming within sight of what was claimed for it, and this the Muskingum does. Season too late, medium large size, fairly productive, good quality and firm, a good berry.

Marshall. (S). A chance seedling found on a stone heap by Mr. Ewell of Massachusetts—a healthy, fairly vigorous grower, season medium, berries of the largest size, only moderately productive, quality good and firm, one of the best to grow for show berries

Parker Earle. (S). A seedling of Crescent crossed with T. V. Munson's No. 8, by J. Nimon of Texas. Makes few runners; season late, very productive, in fact too productive, cannot mature the great number of berries it sets; quality fair, firm, it rusts, unless you have a rich moist soil, or near plenty of water it is not worth growing, it cannot stand our hot dry fruiting season.

Princeton Chief. (P). Thought to be a cross of Crescent and Kentucky, by T. W. Poscharsky, of Illinois, a healthy grower, season late, medium size, not productive enough, medium in quality and firmness, hardly worth trying.

Swindle. (P). A seedling of Jersey Queen and Glendale, by Mr. Smally. It rusts some, season medium, size medium, also productiveness medium. The berry is well named, would not advise anyone to grow it.

Timbrell. (P). A seedling by H. S. Timbrell of Orange Co., N. Y., a healthy, fairly vigorous grower, season late, size large and fairly productive, quality good and firm—with me it did not ripen evenly; this I think will be a serious drawback to its taking a place among the standards

Haverland. (P). A seedling from Ohio. Here is one of the best, if not the best of the standards, it does well everywhere, it will bear as many berries as the Crescent and will average ½ larger, and just as firm as Crescent, a vigorous, healthy grower, season early to medium, size large and very productive, quality good and medium in firmness; would advise everyone growing for market to try the Haverland.

Saunders. (S). Seedling by John Little of Ont., one of the best, its only fault is it rusts some when allowed to set plants too thickly, a vigorous grower, season medium, size large, very productive, best quality and firm, rich in pollen, a good fertilizer. It is a far better kind than Williams in every way.

Bubach. (P). A seedling by Mr. Bubach of Illinois. Here is another to stand by. Hard to beat it, does well everywhere, reports are all good of the Bubach, fairly vigorous grower, season early to medium, large size and productive, very large berries and lots of them, quality good and firmness medium.

Williams. (S). A seedling from about Cainsville, Ont. Some rust but vigorous grower, season medium, size medium to large, fairly productive, poor quality and firm, does not ripen evenly. Not as good as Saunders in any way.

Beverly. (S). A seedling of Miner's Prolific, a healthy, fairly vigorous grower, season medium to late, size large and good flavor, very firm, it was hurt by frost when in blossom. I feel sure from the amount of bloom it will be very productive.

Clyde. (S). Seedling of Cyclone, by Dr. Stayman of Kansas. It has not been introduced yet, and no plants are for sale yet. It is one of the best I had on the place, a vigorous, healthy grower, not a trace of rust, season early, size large and very productive, quality good and firm, berries very attractive. It will I believe be given a place among the standards; much like Haverland in plant growth and quite as vigorous.

Edgar Queen. (P). A seedling from Edgar Co., Ill., by C. O. Curtis. Some rust, fair grower, season medium, size medium, quality medium, light yielder, hardly worth growing.

Gandy. (S). Seedling of Jersey Queen cross with Glendale, healthy growth, season late, size large, shy bearer, good quality, medium in firmness; it is grand for the first picking, soon over.

Leader. (S). A seedling by J. C. Campbell of Massachusetts. Disappointing this year, frost the reason, fairly healthy, not vigorous, season early, size medium to large, low in productiveness, best quality and firm, will give further trial.

Maple Bank. (P). Seedling of Crescent, cross Wilson, at least thought to be such, from Ontario, healthy vigorous grower, season medium to late, size large, productive, good quality and firm. A beautiful berry, shape somewhat like Crescent but quite as large again, and very much darker color. If it does as well in future as it has the past two seasons, it will be placed among the standards.

Philip's. (S). A seedling of Crescent cross Sharpless, a strong grower, though some rust, does well in hills, season medium, size large, productiveness medium, quality fair and firmness fair, a shy bearer in matted rows.

Tennessee Prolific. (S). Seedling of Crescent, cross with Sharpless, a very vigorous, healthy grower, season medium, size fair to large, very productive, well named, quality fair and fairly firm, well worth trying, it is a good one.

Van Deman. (S). A seedling of Crescent, cross with Capt. Jack by J. C. Bauer of Arkansas, a very vigorous grower, some rust when rows too thickly matted; season extra early, before Michel's E. or Beder Wood. Size large and very productive, of good quality and firm, a good one to fertilize Haverland, Warfield, Bubach and other early pistilates.

Woolverton. (S). A seedling by John Little of Ontario. A good healthy grower, season late, size very large, fairly productive, of good quality and firmness medium; a very valuable one, as it is very rich in pollen and blooms early, and continues through the season, fine dark color, well worth growing.

VOLUNTEER REPORT BY STANLEY SPILLETT, NANTYE, ONT.

GOOSEBERRIES—Descriptive List.

Size : S, Small ; M, Medium ; L, Large.
Form : L, Long ; S, Short ; Sh., Shouldered.
Compactness : C, Close ; L, Loose ; St., Straggling.
Form of Berry : R, Round ; Ov., Oval ; Ob., Oblong.
Color : R, Red ; B, Black ; W, White ; G, Green ; Y, Yellow.
Season : E, Early ; M, Medium ; L, Late.

Variety.	Plant.					Berry.			
	Origin.	Foliage.	Vigor. Scale 1-10.	Freedom from mildew 1-10.	Productiveness. Scale 1-10.	Size.	Form.	Color.	Flavor.
Autocrat	English	fair	8	8	8	L	ob.	G	good
Champion	American	very good	9	9	10	M	ob.	G	fair
Chautauqua	English	fair	8						
Downing	American	fair	8	9	9	M	R	G	good
Lancashire Lad.	English	fair	8		8	L	ob.	R	v. good.
Pearl	Amer. and Eng.	good	9	9	9	M	R	G	good
Queen		good	9		9	L	ov.	Y	good
Red Jacket	American	good	8						
Triumph	English	fair	7						
Whitesmith	English	fair	8		8				

Notes on Varieties.

I beg to offer for your consideration the following supplementary report upon the varieties of gooseberries grown by me. I do not think originators in general know for a certainty the parentage of new varieties they have orignated. Taking it all round as a medium-sized berry the Pearl is hard to beat. More vigorous and with better foliage than the Downing it is bound to be generally planted. It yielded this year five quarts to the bush all round with me. Champion, the peer of the Pearl in vigor and foliage, and ahead of it apparently in productiveness and size of berry, is a cross of Downing upon a wild Rocky Mountain gooseberry—so the originator informs me. And it is certainly unlike, in habit of growth and appearance and shape of fruit, any other gooseberry I have ever seen. It is an upright grower, but the wood is long and slender like Houghton, but has not the drooping habit of that variety. In quality I do not think the fruit equal to Pearl. Neither fruit nor foliage has ever shown the least vestige of mildew. Queen is a promising variety having fine healthy foliage and appears very vigorous, leaves being still green though there has been some heavy frosts.

I may say that though by spraying with liver of sulphur most of the English varieties may be grown here successfully, in my opinion for general cultivation our future berry will be obtained along the line of a cross of the so-called American varieties upon the English.

Good authority differs from me upon this point, and contends that our future berry must be pure American and any English blood will certainly bring mildew. Pearl itself is a standing refutation of this contention. What we need is size and productiveness, and to obtain the latter we must have vigor and good foliage, both of which both Pearl and Champion have. They are, therefore, steps in the right direction. Now, if either of these varieties were crossed upon an English variety distinguished more for vigor and good foliage than for enormous size something desirable would be the result. I find that any variety that loses its leaves early in the fall is never productive. Many of these varieties named in report are new, and need further testing before they can be fully reported upon.

A word upon the subject of spraying may not be out of place. My bushes were sprayed with Bordeaux mixture for the protection of the foliage against rust, with the result that little if any rust made its appearance, and the leaves are still green on most varieties. Liver of sulphur was used for mildew with very satisfactory results, even Whitesmith remained free and clean throughout the season.

I shall vary my method another year, spraying some with Bordeaux and others with liver of sulphur alone, while others shall be left unsprayed of every variety.

Reviewing the Situation.

Spraying has passed the experimental stage and is now a recognized necessity by both orchardists and small fruit growers. Any of the different patterns of air pumps enables the orchardist to spray his trees thoroughly and quickly. The small fruit grower is less fortunate, and this probably arises from his needing a more complex implement than the orchardist.

Power and the conversion of the liquid into spray or water-dust are the essentials of the apparatus needed by the orchardist. Transportation is an easy matter when the trees are far enough apart to allow a wagon, stone-boat or hand truck to pass between the rows. When the spaces between rows are not more than two feet, and often where bushes are large, transportation becomes the difficult problem of the three. The truth of this contention is seen in the variety of devices resorted to, none of them combining all the best principles found in all.

Pumps on the principle of the syringe or common pump, no matter whether the water is forced through the rose by the return of the plunger or by lever or by the compression of a bulb by hand—are all lacking in power and evenness of flow.

The knapsack method of transportation, even when furnished with air-pump, has its weakness, not the least of which are getting loaded up and carrying a cold poultice on one's back while the body is in a heated state, which, if not injurious to the health, is very disagreeable.

Again, the small pumps that work from a pail are all right as far as the pump goes, but that way of carrying a burden about is too primitive.

The wagon, the stone-boat or even the two wheel hand truck are not admissible among small fruit, so there is nothing for it but to go to wheelbarrow. This, with a keg so arranged as to take the place of legs, and supplied with a light-force pump with lever handle would be the *ne plus ultra* for small fruit spraying. This combination is not obtainable so far as I can find out, though all are found in the different implements.

Pea Straw as a Mulch.

I was induced last spring to experiment with pea-straw as a mulch. Farmers here make no use of this straw, and often burn it. That used had been run through an ordinary grain thresher.

Three plots, each 24x50 feet, were selected. No. 1 was covered with this straw to the depth of about four inches. No. 2 was cultivated continually throughout the summer about two inches deep, with a Planet, jr., wheel-hoe and scuffler. No. 3 received no cultivation any more than to cut the weeds.

At the end of the severe drouth of last summer the three plots were examined in the presence of several farmers. The soil in No. 1 was so moist that it could be mixed like putty. Every man said he could not have believed it if he had not seen it. No 2, though moist, was not so moist as No. 1. No. 3 was as dry at the depth of ten inches as at the surface.

Test No. 2 was made on a row of evergreens to smother out and rot a piece of June grass sod. About six inches of the straw was applied, and very little grass came through during the summer.

A gentleman here (a farmer) informs me that he covered a weedy garden plot infested with Canadian thistles with this straw in the spring, with the result that this fall, when the mulch was removed, it was clean as a new pin.

A row of 14 pear trees, set this spring along my lane in holes dug in sod, a little larger than the roots extended, were mulched with this material. These trees not only came through the dry summer in good condition, but many of them made two feet of new wood, and they were not Kiefer.

As a rule the orchards in this district are in sod. This is the rule rather than the exception all over Ontario, I presume. Exhaustion of the soil is the usual objection urged against this custom, and pasturing with sheep or hogs the usual remedy recommended. A far more serious objection to this practice is the absorption and evaporation of the moisture from the soil by the grass. Let anyone who is skeptical on this point turn up a spit in a fence corner during a dry spell, and he will be convinced.

Now, if a tree is depending upon water to dissolve and carry into its circulation the food necessary for its sustenance, and the tree is standing in a soil as dry as powder, it must starve no matter how rich the soil is.

We had an object lesson upon this subject last summer. For weeks and weeks apples made no visible growth, and when picking time came were far below their usual size, and who will say what effect this starving process had upon the vitality of the trees.

Many farmers have been converted to the necessity of cultivating their orchards, but are at a loss to know how to set about it. Let the plowing be done both ways, just deep enough to smother the grass (for with Mr. Hutt I fail to see what purpose is served by plowing deep) and as near the trees as the branches will permit. Now let the space about the trees which cannot be plowed be heavily mulched the first year to smother the grass, and more lightly for ever afterwards.

The model orchard in this section, planted eighteen years ago, was kept continually mulched for the first fourteen years, when it was discontinued and grass took possession. The apples in this orchard have grown smaller every year, and the crops have not increased in proportion to the age of the trees. Indeed this orchard gave more bushels three and four years ago than it does now.

NOTES ON GRAPES IN 1894, BY THE SECRETARY.

Of *black grapes*, the Concord still takes the lead. It is an excellent all-purpose grape of strong, vigorous Labrusca blood, and withstands more than most varieties all insects and fungi. It originated with E. Bull, of Concord, Mass., who, they say, is now living a poor man, notwithstanding he gave to the world so excellent a gift. This grape was first exhibited at Boston in 1853. My Concords were harvested this year between the 12th of September and the 12th of October. During this time they were constantly improving in flavor, and after the 1st of October they were, to my taste, much superior to the Worden. The yield was seven tons, and although these sold at the low price of $30 per ton, yet I cannot complain when I compare the profits derived from other lines of agricultural produce.

Of the other black grapes I may mention Wilder. With me so far it is one of the finest black grapes in quality, but a poor bearer, yet it succeeds so well with others that I shall yet hope to have better results in the near future.

Moore's Early I am much pleased with as an early grape to precede the Concord. This year it colored well and sold well in the markets.

Black Giant is a large productive grape, but, in my opinion, very poor in quality.

Of *white grapes*, I do not yet know of any variety more profitable than the Niagara. It is like the Concord in productiveness, and nearly as healthy, but somewhat subject to Peronospora, which causes the berries to shell off, especially on poor land, and to become insipid. When well ripened I consider the Niagara an excellent general purpose grape, and, on account of its great yield, one of the most profitable; yet when you speak of it as a dessert grape, it lacks quality. Indeed it will surely be pronounced insipid by one who has tasted a Salem or Lindley.

The *Victoria*, one of the numerous seedlings raised by Mr. T. B. Miner, of Linden, N. Y., was this year a favorite white grape with me, and I am inclined to think that it will yet take the foremost place among white grapes. The bunches are well shaped, the

skin has a fine waxen lustre and heavy bloom, and the berries are of a good size and fair quality. The vine is very productive. By some this grape is called a White Concord.

Eldorado greatly took my attention this season. It is one of Rickett's seedlings, a cross between the Concord and Allen's Hybrid. The berry has a beautiful waxen white appearance, and when fully ripe attains a golden yellow color with a thin white bloom. It shows beautifully when [illegible]sted with red and black grapes on a fruit dish. The quality is in my opinion, most excellent.

The *Triumph* (Campbell's Concord Hybrid No. 6) also took my fancy, but unfortunately it is too late for our climate and does not ripen as well as the Catawba. Otherwise it is an excellent bearer and the bunches are very large and fine. It is a cross between the Concord and Chasselas Masque.

Noah is another grape that is a little late for Ontario, but ripened very well with me this season. The bunches are fine, but the berry is small. It is a heavy bearer. This grape was first disseminated in 1876.

The *Pocklington* ripened well this season at Grimsby, and is, in my opinion, superior to the Niagara in quality, but is not nearly so productive.

Of *red grapes*, the Lindley is my favorite red grape for profit. The vine is very healthy and productive, the fruit is of good quality and beautifully colored. It packs well in baskets with the Concord and Niagara, and these three so far are my favorites for the vineyard, for they sort up well together when I wish to make an assorted package of red, white and black grapes for dessert purposes. The Lindley was produced by Mr. Rogers by hybridizing the Wild Mammoth grape of New England with the Golden Chasselas.

The *Delaware* will probably rank as the choicest table grape, but I consider it scarcely productive enough to be planted largely for profit. This year it produced a crop of fine bunches, but, as a rule, averages less than the Lindley, and the vine is much less vigorous.

Woodruff Red was this year a most showy grape in my vineyard. The berries were large and of a bright carmine color with a heavy bloom. It ripens earlier than the Concord. The quality, however, of this grape is not good enough to deserve much commendation. Still for a fancy package of assorted grapes I would like to try for a change Woodruff Red for red, Victoria for white, and Wilder for black. This grape originated with Mr. C. H. Woodruff, of Ann Arbor, Mich., in 1874.

The *Brighton* grape did fairly well with me this season, but suffered from downy mildew more than usual. Perhaps it was because it grew in close proximity to the Salem, which is quite subject to that form of mildew. The skin of this grape is almost too tender to make it very desirable as a first-class shipping variety, and when fully ripe it is too dark in color to rank high as a red grape, but of all the grapes I know, none please me better for my own table.

FINANCIAL STATEMENT.

The following is the financial statement of the Board of Control for the year 1894 :

Receipts.		Expenditure.	
Legislative grant	$1,000 00	Printing and stationery	$209 00
Balance overdrawn	7 06	Trees and plants for testing at stations	160 97
		Allowance to experimenters	400 00
		Expenses incurred in selecting stations and in official visits to the same	91 00
		Salary of Secretary	50 00
		Board meetings	63 55
		Freight and duty	18 87
		Preliminary meetings of committee	8 50
		Postage and telegrams	5 17
Total	$1,007 06	Total	$1,007 06

BINDING SECT. AUG 23 1967